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INTERNATIONAL COOPERATION IN SPACE

Legal Questions

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INTERNATIONAL COOPERATION IN SPACE

LEGAL QUESTIONS

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[Brief Annotation]

[Text] The book examines a broad range of new international legal problems which have arisen in international cooperation among states in the area of the research and use of space. A detailed analysis is provided of the legal bases in the international space programs of the Soviet Union, the United States, the Western European nations as well as other states, in addition to the legal conditions regulating the use of space for practical purposes.

INTRODUCTION

Cooperation among states in the research and use of space for peaceful purposes has become an important and permanent factor in international life. The 24th and 25th CPSU congresses affirmed the intention of the USSR to further develop mutually advantageous cooperation with other states in the development of outer space.¹ Our state has firmly adhered to this policy since the beginning of the space age.

The first earth satellite was launched by the USSR during the period of the International Geophysical Year [IGY] which was an extensive and diversified program involving simultaneous scientific observations throughout the world. On the occasion of the first manned flight in space in 1961, the Appeal of the CPSU Central Committee, the Presidium of the USSR Supreme Soviet and the USSR Council of Ministers emphasized that "we consider the victories in the conquering of space to be achievements not only of our people but also of all mankind. We are pleased to put them in the service of all peoples, in the name of progress, happiness and well-being for all people of the world."²

At present the USSR is involved in international cooperation programs for the study and development of space with a large number of states belonging to different social systems. The nations of the socialist commonwealth, the United States, France, India and Sweden--these are the range of states with which the USSR has the largest space cooperation programs.

However the scale and forms of Soviet cooperation with the foreign countries in space research go far beyond the limits of these programs. Joint satellite tracking stations are located on the territory of 18 nations, and samples of lunar soil brought back to earth by Soviet automatic stations are being investigated in the laboratories of a score of countries. The USSR is making a major contribution to the activities of numerous inter-governmental and nongovernmental organizations involved in space problems.

Although the basic portion of space research is being carried out by the USSR and the United States, space development is becoming an international matter more and more. Scientific-technical, economic and political factors are behind this.

A study of the processes which are developing on a worldwide scale and in interplanetary space, in being made possible by new technical devices, has necessitated coordinated actions by various countries. The necessity of international cooperation has become all the more apparent after the ways of the practical use of space were determined for the interests of meteorology, long distance communications, navigation and for studying earth resources. The high cost of space and missile equipment, the economic advisability of the joint use of the scientific and production potentials of the nations have also led to the necessity of cooperation in space activities. For various reasons both the scientifically and technically advanced nations as well as those states for which participation in space research serves as one of the means for eliminating economic backwardness are interested in international cooperation in the development of space.

Truly equal cooperation by states in space research, regardless of certain difficulties, is developing more and more. Specially established interstate and public organizations are working actively in the international area, hundreds of international agreements have been concluded, international satellites and research missiles are being launched regularly, and international special-project satellite systems have been developed.

Along with the development of space research and its practical application and the involving of an ever larger number of states in these activities, there has been an evolution in the forms and nature of collaboration.

At the outset of the space age, the joint discussion of the results of scientific research and a comparison of procedures played the dominant role. At that time there was only a certain coordinating of scientific plans. International cooperation in tracking earth satellites also developed rather early on.

In the middle of the 1960's, joint work in space in the direct sense of this word became foremost, including the development of missile and space technology and various space devices by the joint efforts of the states and their use for solving scientific and national economic problems. For these purposes, in 1964, two Western European space organizations were organized, and in 1967, the Intercosmos program was approved for multilateral collaboration among the nine socialist states. The Soviet Union signed an agreement on space cooperation with France. The United States, along with concluding a number of bilateral agreements on joint space experiments, began to organize the international Intelsat Consortium for the use of communications satellites for commercial purposes.

The picture of international space cooperation in the form that it developed by the end of the first decade of the space age continues to exist at present, and it can be represented in the following way: three world centers of cooperation--the USSR, the United States and Western Europe--with definite relationships between them.

At the start of the 1970's, important international agreements were signed in the area of the practical applications of space research. These were the agreement on the setting up of the international Intersputnik space communications system and organization, and the permanent Intelsat agreements. The tendency toward the practical use of space technology was also reflected in a number of other projects of international working systems which are now in the stage of implementation.

The recent years have been characterized by the start of a new stage in the pooling of efforts by states to study and develop space. In accord with the program of socialist economic integration among the CEMA countries, there has been further development of cooperation among the socialist nations. This has been expressed in the signing of the Agreement on Cooperation in the Research and Use of Outer Space for Peaceful Purposes of 13 July 1976 as well as in the proposal of the USSR for the citizens of the socialist countries to participate in manned flights on Soviet spacecraft and stations. The USSR has concluded new agreements on cooperation with a number of the capitalist states. International cooperation in this area has also been greatly influenced by the conclusion of agreements in 1972 and 1977 on cooperation in the research and use of space for peaceful purposes between the USSR and the United States.

Along with the tendency for a development and deepening of ties between states in the study and developments of space and for the influence of space activities in various areas of international life, in the capitalist world one can clearly note another tendency, one toward separateness and competition. For a number of years "space Europe" has been in a state of permanent crisis as it has been unable to reconcile the contradictory interests of its partners. The United States has not abandoned its attempts to use cooperation for the purposes of maintaining its monopolistic or predominant position in the capitalist worlds in the various areas of space technology which may involve a direct economic gain.

The present picture of international cooperation in space as a whole is complex and contradictory; it has been shaped by coinciding and opposing forces and trends, and represents a synthesis of various approaches and aspirations of the states.

International cooperation in the development of space is most directly tied to the foreign policy of states. The degree of international cooperation in this area cannot help but depend upon the state of political relations between the corresponding states. The feedback with politics is expressed in the fact that international cooperation in space development has a positive impact on strengthening confidence between states, and makes a contribution in adding a material content to the process of a lessening of international tension.

However, in the United States there are influential circles which are endeavoring to use scientific and technical cooperation for purposes which

have nothing in common with detente. This can be seen, in particular, from the book published in 1974 in the United States entitled "Soviet Cooperation in Space" with a foreword written by the former U.S. Ambassador to the USSR, F. Kohler.³ In essence its authors urge that cooperation between the United States and the USSR in the space area be used for interfering in the internal affairs of the USSR. This book is a new reminder that detente as before remains an object of acute political and ideological struggle.

The carrying out of a broad program of international cooperation in space development by the USSR and the growing influence of scientific and technical ties on the system of international relations necessitate a theoretical analysis and generalization of the international legal questions which arise in the process of cooperation, the elucidation of the relationships of the scientific-technical and legal aspects of this process, as well as a disclosure of the international legal mechanism of cooperation and a tracing out of the ways to improve this.

Because of the greater national economic use of space devices, greater attention has been assumed by the questions of elaborating the legal conditions for the international applied or working space systems based on the use of communications, navigation and weather satellites as well as satellites for studying earth resources. Related to this group of questions are the international legal problems which arise in the process of cooperation in setting up international orbital stations, the prototype of which was the system of Soyuz and Apollo spacecraft during their joint flight in 1975.

All these questions which as yet have not been sufficiently elaborated in Soviet and foreign legal literature are not only of theoretical significance, but directly involve the practical activities of a number of the Soviet ministries and departments.

International space law which was born out of scientific and technical progress, in turn, operates as an important means in developing cooperation among states in the area of the study and use of space. The effect of law on scientific and technical cooperation is expressed, in the first place, in the creation of general space law conditions which ensure the best circumstances for the development of cooperation among the states, and secondly, in the regulation of specific relationships between states which arise when they carry out joint scientific and technical activities.

Correspondingly, cooperation between states in the legal sphere is carried out in two basic areas. On the one hand, there has been a process of the progressive development and codification of international space law by the elaboration of multilateral general-purpose agreements which regulate the national and international activities in space. This direction can conditionally be termed cooperation on the question of space activities.

On the other hand, joint scientific and technical activities between states presuppose the creation of the appropriate international mechanism of cooperation, as well as a legal formalization of the relationships between the participants in the international projects and programs. This also is a legislative process, but is directly linked with the joint scientific and technical activities of the states.

In the book offered to the readers, basic attention has been given to examining the questions related to the second area of legislative activities, since they have been least examined by the Soviet and foreign specialists in the area of space law.

FOOTNOTES

1. "Materialy XXIV S"yezda KPSS" [Materials of the 24th CPSU Congress], Moscow, Politizdat, 1971, p 30; "Materialy XXV S"yezda KPSS" [Materials of the 25th CPSU Congress], Moscow, Politizdat, 1976, p 56.
2. PRAVDA, 13 April 1961.
3. D. L. Harvey and L. C. Ciccoritti, "U.S.--Soviet Cooperation in Space" (with a foreword by Ambassador F. D. Kohler), Journal for Advanced International Studies, University of Miami, 1974, p 403.

PART I: THE LEGAL MECHANISM OF INTERNATIONAL SPACE PROGRAMS

CHAPTER 1: THE TREATY AS THE BASIC LEGAL INSTRUMENT OF INTERNATIONAL COOPERATION IN SPACE DEVELOPMENT

Among the international treaties relating to space activities, a particular place is held by the general-purpose multilateral agreements which have been worked under the United Nations, including: the Treaty on the Principles Governing the Activities of States in the Research and Use of Space Including the Moon and Other Heavenly Bodies (1967), the Agreement on the Rescuing of Cosmonauts, the Return of Cosmonauts and the Return of Objects Launched into Space (1968), the Convention Governing International Responsibility for Damage Caused by Space Objects (1972) and the Convention Governing the Registration of Objects Launched into Space (1975).

The enormous significance of these documents which comprise the bases of law and order in space is indisputable. They contain the most general standards for the activities of states in the given area, and these standards are designed for an indeterminately long time and are recognized as compulsory by a majority of states. A thorough analysis of the history of the elaboration, the content and significance of these agreements has been made in the works of Soviet and foreign legal scientists. These questions have been taken up in the works of V. V. Aldoshin, E. G. Vasilevskaya, G. P. Zhukov, G. P. Zadorozhnyy, F. F. Kovalev, Yu. M. Kolosov, Ye. A. Korovin, M. I. Lazarev, P. I. Lukin, B. G. Mayorskiy, G. A. Osnitskaya, A. S. Piradov, A. A. Rubanov, Yu. M. Rybakov, O. N. Khlestov, I. I. Cheprov, V. I. Shilin and others.¹

Along with the designated agreements, there exists another, significantly more numerous group of international agreements which regulate the joint activities of states in space. This is the question of the international scientific and technical agreements which represent a legal form for establishing relations between states as related to their joint activities of studying and developing space. For a long period of time these agreements remained outside the view of the science of space law, although they encompass a large number of states belonging to different sociopolitical

systems, and their role has been constantly growing. The international space programs of the USSR, the United States and Western Europe are based on such agreements.² At present their total number already runs into the hundreds.

In line with the great scope of international space activities, the question of the legal nature of the agreements governing cooperation in the research and use of space and their place in the system of international space law is assuming an indisputable theoretical and practical interest.

1. The Legal Nature of International Scientific and Technical Space Agreements

International scientific and technical space agreements establish, alter or abrogate reciprocal rights and duties of states relating to their joint activities in the area of the research and use of space for peaceful purposes. Agreement on joint activities in the scientific and technical areas of space development comprises the basic content and subject of all these agreements.

Depending upon the selected criterion, such agreements can be divided into: general and special; international, intergovernmental and interdepartmental; bilateral and multilateral (including regional); those concluded in a simplified form and with the observing of all the known stages of drawing up a treaty. They are also extremely diverse in terms of names. Do all these factors influence the legal force of the agreements and their classification in the sphere of regulation by international law or civil law?

Soviet legal science proceeds from the necessity of a clear delimitation of the public international legal relations where the basic principals are states acting on the international scene through their representative bodies, and the civil law relationships where the basic principals are the citizens and organizations acting as legal entities. The first area of legal relationships is included in the sphere of international public law, and the second is part of the sphere of international private and national law.³

Here it is essential to bear in mind that the public law treaties between states or between states and intergovernmental organizations can create provisions which regulate civil law relationships. At the same time such treaties also operate as sources of international public law and sources of international private law. For example, Article VIII of the Intergovernmental Agreement on the Intelsat International Communications Satellite Organization establishes the general conditions for the concluding of civil law contracts for the delivery of equipment and for the providing of services.

Although the civil law relations undoubtedly are part of the overall legal mechanism of international cooperation in the area of the research and use of space, they comprise a relatively small portion of the legal relationships

which arise in the course of cooperation. The public law sphere of cooperation is of determining significance, and this includes a predominant majority of the international agreements in the scientific and technical area. The concern of these agreements is the actions of states as principals of authority and the sovereign carriers of international rights and obligations. The object of such agreements, as a rule, is the important and fundamental questions which directly involve the interests of the states.

The international legal nature of the intergovernmental and international agreements is indisputable. The question of interdepartmental agreements is more complicated, and they comprise the majority among the scientific and technical space agreements.

The state can act only through its bodies (of authority and state administration) which in international affairs act as its representatives. Because of the complicating and specializing of international relations and in particular, because of the growth of international economic and scientific-technical ties, recently a general trend can be observed toward a broadening of the range of state bodies engaged in carrying out international ties, and bodies which within the limits of their competence are granted full power to conclude international treaties. This circumstance has been repeatedly noted in the legal literature.⁴

The question of what state bodies are granted full powers to conclude international treaties has been left by international law completely to the discretion of the internal state legislation. Although the constitutions of a majority of nations reserve these powers to the superior bodies of state authority and administration, there are constitutions where it is directly stated that certain categories of international treaties can be concluded by individual governmental bodies.⁵ The right of state bodies to conclude international treaties can be determined not only in constitutional enactments but also by other sources of domestic state law, by existing practice or by previously concluded international treaties. This has provided justification to carry out in theory a separation of the state bodies involved in external relations into constitutional, conventional and special.⁶

In accord with the Soviet theory of international law, the bodies of foreign relations include not only the departments of foreign affairs, but also other domestic state bodies concerned with special questions of foreign relations, within the limits of their competence as defined by the enforceable enactments.⁷ In the USSR, among such bodies in the area of international cooperation in the research and use of space one obviously would have to put the USSR Academy of Sciences.

According to the Academy Charter, it is the superior scientific institution of the USSR directly subordinate to the USSR Council of Ministers, and each year the Academy submits a report on its activities to the council. The Charter defines the right of the Academy to engage in international ties (Articles 8, 11, 43"n" and 72).⁸

Practice shows that in the questions of international cooperation in the area of the research and use of space, the USSR Academy of Sciences acts as a state body of foreign relations with special competence, and the international agreements concluded by it in this area should be viewed as interdepartmental.

In individual instances the right to conclude international agreements is delegated by governmental decrees or by international treaties to the Council on International Cooperation in the Area of Space Research and Use Under the USSR Academy of Sciences (the Interkosmos Council), and this is a domestic state interdepartmental body which was set up upon governmental decision. In such instances the agreements concluded by the Interkosmos Council should also be viewed as interdepartmental or interinstitutional.⁹

In the United States the National Aeronautics and Space Administration [NASA] is the state body of foreign relations with special competence in the area examined by us; in France it is the National Space Research Center, in India, the Indian Space Research Organization of the Indian Government, in Sweden, the Swedish Administration for Space Activities, and so forth. Certainly the superior bodies of state authority and state administration in each specific instance or under general procedures can limit the special competence of the bodies subordinate to them in terms of the range and nature of agreements which can be concluded by them.

The question of the legal nature of the interdepartmental agreements and their relative force, in comparison with other international legal enactments, belongs among the insufficiently elaborated questions of treaty law. Recently this has assumed great significance not only in such a special area of international relations as collaboration in the development of space, but also in other areas of international economic and scientific-technical ties. In particular, it is important for developing direct ties between the ministries and departments of the CEMA countries.

In discussing the legal problems of socialist economic integration at an international scientific conference organized by the Institute of State and Law of the USSR Academy of Sciences in 1971, the question of the legal nature of interdepartmental ties was discussed among others. In the book published on the results of this conference, it was pointed out that the participants of the latter were unanimous in describing interdepartmental ties as interstate ones.¹⁰

This conclusion agrees fully with the provisions of international law that in international relations a state can act only as a single entity, provisions stemming from the principle of state sovereignty and the unity of state power. On the international scene, state bodies can only be representatives of the state, and the agreements concluded by them obligate not only these bodies but also the corresponding states.

The principals of any international legal treaty (including also departmental) and its parties are the states and not the governmental bodies which have concluded them.¹¹ In other words, the rights and duties stemming from interdepartmental agreements are extended to the corresponding states as a whole, and not just to the ministries and departments which have signed the agreement.

This important theoretical and practical conclusion should not, however, lead to an underestimating of the role of the interstate and intergovernmental agreements. Although any international legal treaty, in placing obligations on the states, is in this sense intergovernmental, the participants in international intercourse resort to the concluding of treaties in the name of states and governments in those instances when they wish to give them particular significance and authority. For example, this is the role of the intergovernmental agreement by the nine socialist states to cooperate in the research and use of space for peaceful purposes of 13 July 1976, and the intergovernmental space agreements between the USSR and United States of 24 May 1972 and 18 May 1977 signed on the basis of the existing interdepartmental agreements between the USSR Academy of Sciences and NASA, or the intergovernmental agreement on the system and organization of the Intersputnik space communications.

In Soviet practices, the intergovernmental space agreements are of great significance also because a number of ministries and departments are engaged in space activities in the nation, and ensuring the fulfillment of international agreements within the nation is facilitated in concluding agreements on the governmental level.

Due to the fact that interdepartmental ties develop actively in international scientific and technical cooperation and space development, a clear definition of the intrastate right of the powers of the corresponding bodies to conclude international treaties assumes great significance, as does the preventing of contradictions between treaties concluded among bodies of the same states which possess a different range of competence.

Agreements on scientific and technical questions of space research concluded directly between scientific research institutes and the scientific collectives of different nations must be differentiated from interdepartmental agreements. As an example one might give the bilateral and multilateral agreements between the astronomical institutions of the academies of sciences in the socialist nations for cooperating on satellite tracking and conducting scientific research on the basis of these observations. Obviously this same category would include certain agreements on analogous questions concluded by the foreign scientific institutions of the U.S. Smithsonian Observatory. If such agreements are not reinforced by intergovernmental or interdepartmental agreements, they cannot have an international legal nature and do not impose obligations on the corresponding states.

Now let us examine the question of whether or not the form of scientific and technical agreements influences their legal force as acts of international law. This question is of interest due to the fact that a majority of the scientific and technical space agreements has been concluded in a simplified form, that is, by an exchange of notes or letters, or by the signing of agreed upon protocols or memorandums.

A simplified form of international treaties is also characteristic for modern treaty practices of states. With the development and specialization of international relations, the number of agreements concluded between states in a simplified form has been continuously growing. Authors who have studied this question have pointed out, for example, that of the 4,834 agreements published by the League of Nations, 1,078 were concluded by an exchange of notes.¹² Of the 1,000 international treaties which were first registered with the UN Secretariat, 380 were in the form of an exchange of notes.¹³ At present the percentage of such agreements is growing even more. However it is obvious that not any exchange of notes forms an agreement, but only that which reinforces an achieved international understanding.

Modern international law does not recognize a compulsory form of international treaty. On this question the doctrine and practices of international law have been unanimous. The UN International Law Commission has pointed out in one of its drafts that the simplified form does not reduce the legal force of the treaty.¹⁴

The 1969 Vienna Convention on International Treaty Law considers international agreements among treaties regardless of whether or not such agreements are contained in one or several interrelated documents, and in addition regardless of their concrete name (Article 2, Point 1 "a"). Although the Vienna Convention regulates only the law of treaties concluded in a written form, it specially notes that this circumstance does not involve the legal force and effectiveness of the international agreements concluded not in a written form (Article 3).

Thus, the form and the name of the international scientific and technical space agreements depend totally upon the will of the agreeing parties and are of no significance for qualifying them as documents of international law.

The same can be said on the number of participants in international agreements. Without creating, as a rule, rights and obligations for third states without their agreement, a treaty has compulsory force for all its participants regardless of whether the treaty is bilateral or multilateral.

An analysis made makes it possible to state the following. A majority of documents covered by the overall concept of "international scientific and technical agreements in the area of space research and use" can be considered among the international law treaties and is within the sphere of

legal relationships regulated by international public law. The obligatory legal force of these documents for the corresponding states does not depend either on the level of the state bodies which have signed them, upon the number of participants or upon the form and name. The rights and duties deriving from these agreements are extended not only to the bodies which have directly concluded them, but also to the states which the given bodies represent.

As space is turned more and more into an area of economic activity and as the international organizations concerned with the questions of its commercial use continuously grow, the significance of the agreements which are civil law contracts and are regulated by the procedures of international private and national law will increase. However, here in the future international legal enactments will be of determining significance in organizing international space collaboration.

Of course, there is an entire area of international cooperation in the study of space among individual scientists, scientific collectives and institutions of various states, as well as along the lines of international public organizations; this area is not within the sphere of legal relations, although it does play an important role in the overall mechanism of international cooperation.

2. Scientific and Technical Space Agreements as Sources of International Space Law

Scientific and technical space agreements which are part of the sphere of international public law are considered in a definite area of it, international space law. The question arises of what is the role of these agreements in shaping the procedures of international space law?

For answering this question, it is essential briefly to take up a notion which was widely found, particularly in the past, and according to which only a certain portion of international treaties can play a law-making role.

The dividing of all international treaties into law-making treaties¹⁵ (*traités-loi, Verordnungen*) and contractual treaties¹⁶ (*traités-contracts, Verträge*) spread in the doctrine of international law beginning at the end of the previous century.¹⁷ As is known, this theory states that the law-making treaties include only those which contain general, abstract standards of law which are new or existed previously in the form of customs. As for the contractual treaties, they create or abrogate specific rights and obligations of states, and they regulate interstate relations as applied to a specific case. Only the law-forming treaties, in the opinion of the supporters of this theory, can be viewed as the sources of international law. Certain authors have gone even farther and have stated that only a multilateral treaty can be law-making, while bilateral treaties generally cannot be the sources of international law, regardless of the nature of the standards contained in them.¹⁸

It must be pointed out, however, that the designated dividing of treaties has not gained universal recognition in the theory of international law, and in practice it makes no sense since the legal force of an international treaty does not depend upon the category it is in. Both in the past and at present, along with the supporters of this theory, there has also been a large number of opponents. At the end of the 19th century, the prominent Russian international legal expert N. M. Korkunov, while in principle accepting this division, noted the law-making nature of any international treaty.¹⁹

In the Soviet doctrine of international law the predominant viewpoint is the one according to which "any current international treaty has a legally binding force for its participants, and in this sense is law-making."²⁰ The Soviet international legal experts D. B. Levin and A. N. Talalayev held somewhat different positions on these questions.

D. B. Levin in his book "Osnovnyye Problemy Sovremennogo Mezhdunarodnogo Prava" [Basic Problems of Modern International Law], recognized the definite significance of dividing treaties into law-making and contractual. However here he did not deny the role of the latter as sources of international law, but merely said that "law-making treaties are of greater significance as sources of international law."²¹ A. N. Talalayev in his work "Yuridicheskaya Priroda Mezhdunarodnogo Dogovora" [The Legal Nature of an International Treaty] assumed a dividing of treaties into legislative and nonlegislative, and the latter are not to be considered sources of international law. Here the author himself emphasized that it would be very difficult in practical terms to isolate the treaties which would not contain the provisions of international law, and that treaties which are not legislative "can almost not be encountered in the official collections of the international treaties of states."²²

The widely known international lawyer L. Oppenheim, without denying the "convenience" of dividing treaties into the designated categories, has noted that in principle all international treaties are law-making, as they are binding for their participants.²³ A similar viewpoint has been advanced also by H. Kelsen, S. Visser, S. Rousseau, P. Guggenheim and other prominent bourgeois scholars.

With good reason the UN International Law Commission, in taking up the questions of treaty law, found it impossible to recognize the dividing of international treaties into the mentioned two categories, and no such division exists in the 1969 Vienna Convention on International Treaty Law.

This does not mean, of course, that in this manner any differences are obliterated between the treaties which establish general principles which are widely recognized by the states and the rules of relationships between states and the treaties which contain more specific special procedures which are valid only in terms of a restricted range of states or just two states. Undoubtedly, the former hold a more important and determining

place in the system of international law, and consequently also among its sources.

However in practical terms it is extremely difficult to make a strict delimitation between these categories of treaties, in particular by using a criterion of a greater or lesser commonness of the provisions contained in them. Without saying that both general and concrete provisions are to be found frequently in the same treaty, the very concept of the commonness of an international legal standard is extremely imprecise and elastic. A standard can be general in terms of its content, it may have an abstract nature, but be in force only in relations between two states, that is, it may not be generally recognized.

At the same time a provision which is concrete in its content but is not designed for repeated application may be binding on a large number of states participating in the treaty, and for this reason it can be considered general from the viewpoint of the group of states for which it has binding force. Thus, if the provisions of international law are examined from the viewpoint of their action in time and space, we would be forced to state that the provisions, including those which are found in the same treaty, have the most divergent degree of commonness.

Let us illustrate this from the example of one of the scientific and technical space agreements between two capitalist countries.

On 27 February 1965, by the exchange of diplomatic notes, an intergovernmental agreement was concluded between the United States and Mexico for establishing a satellite tracking station on Mexican territory.²⁴ In concluding the agreement, the government of Mexico, in defending its independent foreign policy course, demanded that along with the provisions defining the procedure for establishing, operating and financing this station, the text of the agreement would include references to certain general principles which should guide the states in the research and use of space. Previously these principles had been proclaimed in the resolutions of the UN General Assembly (the Space Treaty at that time did not yet exist). Thus the agreement mentioned space research and use for the good of man and in the interests of all states regardless of the degree of their economic and scientific development, as well as the fact that the activities of states in space should be carried out in accord with international law, including the UN Charter (Article VI).

As a result, the strictly special agreement contained both concrete provisions as well as provisions of a most general nature which, in being formulated by that time only in the resolutions of the UN General Assembly, acquired binding legal force for the states participating in this agreement. From the example of this agreement, one can see how difficult it is to consistently make a division of treaties into law-making and contractual (here there are elements of both), even if the fundamental possibility of such a division is assumed.

Provisions which are of a general nature are encountered as a whole in a series of scientific and technical space agreements. Thus of great significance for the progressive development of international space law has been the obligation of the USSR and United States to cooperate among themselves and with other nations in the area of settling the international legal problems of space research and use, as stated in Article 4 of the U.S. and USSR Agreement of 18 May 1977. The particular role of the two leading space powers in strengthening law and order in space is indisputable.

The rules of a technical nature which are contained in the scientific and technical agreements are often designed for repeated use in the relations between the treaty-making states. For example, the Intergovernmental Soviet-French Agreement of 30 June 1966 mentions not specific obligations of the parties to carry out one or several experiments, but rather it is concerned with the basic directions of cooperation by the two countries in developing space over the long run, the mechanism of implementing such cooperation and the obligations of the parties to provide help and support to the interested organizations of both countries.

Finally, those agreements which consist predominantly of concrete, technical obligations of the parties involved in conducting joint experiments also play an important role in shaping the new provisions of space law. It is essential to bear in mind that some of the provisions contained in them and which are repeated in analogous agreements in the future may assume the nature of a generally recognized provision of state law. The well known Polish international legal expert M. Lachs has noted that "often the use of certain principles of even a purely technical nature in treaties of the same type can be the basis for a broader practice of the states and thereby become incorporated among the generally recognized principles of international law."²⁵

For example, the uniform special agreements on creating stations for optical observations of satellites concluded by the USSR with many nations have given rise to principles for the establishing and functioning of such stations and these principles are widely recognized and observed in practice. In particular there is the principle in accord with which the scientific results obtained by these stations are to be used by the collaborating states on equal bases and upon agreement among them are to be made available to the world scientific community. In this manner there arose the principle in accord with which the states, as a rule, do not make reciprocal payments for joint scientific experiments in space when the results are the general property of the corresponding states.

The circumstance that according to the Statute of the World Court in settling disputes turned over to it it should accept "both general and special" international conventions which establish rules definitely recognized by the disputing states (Article 38, Point 1 "a" of the Statute) is affirmation that special agreements, along with general ones, should be viewed as law-making sources of international space law which create obligatory rules of conduct for the participants of the corresponding agreements.

As for the relative role of the various scientific and technical agreements in the law-making process, in the sense of creating new standards of conduct, as was pointed out in the individual examples, in bilateral and multilateral agreements, there are encountered standards of a general character which are subsequently reinforced as principles of space law, standards which develop and concretize general principles in terms of definite types of joint activities by states in space, and, finally, standards which merely apply already existing principles and standards to certain situations which arise in the process of cooperation. And all the designated types of standards can be found in the same agreement.

Only by analyzing a specific international agreement is it possible to answer the question of whether or not it introduces new essential elements into the development of international space law. On this level of great interest is an analysis of the multilateral agreements of a general nature which regulate entire areas of relationships involved in space cooperation and which in terms of their aims come close to universal ones (for example, the constituent acts of the international applications satellite systems).

Undoubtedly, the standards which develop in the form of cooperation between states with different social systems have the greatest opportunity for recognition by a broad group of states.

The provisions of scientific and technical agreements which run contrary to the mandatory standards of general international law cannot be viewed as valid or even more as creating new standards of conduct.²⁶ In terms of international space law, many *jus cogens* provisions are contained in multilateral agreements on space law worked out within the United Nations. For example, any understanding will be invalid between states should it involve the appropriation of a portion of space or the refusal of solidary liability in carrying out joint activities in space, since such an understanding would run contrary to the mandatory provisions of the 1967 Space Treaty and the 1972 Convention on Liability for Losses.

On the basis of what has been stated, the following conclusions can be drawn.

In the scientific and technical space agreements, the provisions of space law are to be found with the most divergent degree of commonness both in terms of content and in terms of the range of states covered by them, including provisions which are subsequently generally recognized.

The interstate, intergovernmental and interdepartmental agreements on cooperation in space development, in comprising the sphere of international legal regulation, are sources of international space law for the states concluding them even in those instances when the relative role of such agreements in the shaping of new general principles of the law is insignificant.

Modern international space law cannot be viewed in isolation from the treaty provisions which regulate scientific and technical cooperation among states in research and use of space for peaceful purposes. Although many of these provisions are not of a general nature but rather a concrete and special one, they are an important component element in international space law, and they are organically part of it and serve as the basis for the further elaboration of its general principles.

3. The Principle of Cooperation in International Space Law

In line with the particular role of international cooperation in the area of space development, it is of interest to bring out the legal content of the principle of cooperation from the viewpoint of international space law. In the Western literature on this question, opposing viewpoints are encountered running from the proclamation of cooperation in space as an unconditional duty of all states to the complete negation of the legal force of this principle.

At a seminar on the teaching of space law held in Buenos Aires in 1972, the Latin American legal experts approved a declaration which stated that in line with the coming into force of the Treaty on the Principles for the Activities of States in the Research and Use of Space, Including the Moon and Other Celestial Bodies (1967), international cooperation "is a legal obligation establishing the legality of the activities carried out in space and on celestial bodies."²⁷ Analogous statements were made in the speeches by representatives from certain nations in the United Nations and at international scientific conferences.²⁸ The legal adviser of the Indian Ministry of Civil Aviation, in an article published in 1973, also declared that "collaboration in space affairs is a recognized obligation of all states."²⁹

However the Dutch professor D. Goedhuis has proposed that the 1967 treaty "refrained from prescribing a definite obligation in this area."³⁰ A similar viewpoint was stated by the well known English specialist for air and space law, Bing Cheng.³¹

Obviously the given question requires an approach from broader positions. With all the significance of cooperation for the development of space research, it cannot be viewed as a monopoly on just this area of interstate relations. Equally important is the role of cooperation in political, economic and other spheres of international life. In this regard the legal content of the principle of cooperation in space law should not be interpreted in isolation from the sense which is invested in the concept of the principle of cooperation in modern international law generally.

The principle of cooperation among states is among the seven basic principles in international law unanimously affirmed by all the UN members in the Declaration on the Principles of International Law Concerning Friendly Relations and Cooperation Between States in Accord with the UN Charter.³² According to this declaration, cooperation between states, regardless of

the differences in their political, economic and social systems, in the various areas of international relations is an international legal obligation.

At the same time not any cooperation is proclaimed as such an obligation in the declaration, but only that which corresponds to the UN Charter, that is, cooperation carried out in observing the other generally recognized principles of international law. This is reflected in the very name of the principle: "the obligation of states to cooperate with one another in accord with the UN Charter." In elucidating the sense of this principle in the declaration, its binding nature is particularly emphasized in relation to the tasks of maintaining international peace and security. In enumerating the specific types of collaboration, the declaration states that cooperation should be carried out in accord with the principles of sovereign equality and nonintervention. The principle of cooperation between states is interpreted analogously in the Final Statement of the European Conference on Security and Cooperation.³³

The principle of cooperation in accord with the UN Charter, as has been pointed out in Soviet literature, reflects the basic idea of peaceful co-existence, and presupposes active relationships among states in different areas.³⁴ This principle and the conditions of its implementation are fully applicable to relations involved in the research and use of space, as one of the areas of interstate relations.

At the same time, as applied to space activities by states, this general principle of international law should be examined in light of the principles set down in the 1967 Peace Treaty which is one of the basic sources of international space law.

The desire of the states to provide maximum aid to the all-round development of international cooperation in space has been stated in the preamble and in many articles of this treaty. This has provided solid grounds for a number of authors to put cooperation among states in the peaceful use and research of space among the basic principles of international space law.³⁵

The Preamble of the Treaty states the desire to aid in broad international cooperation both in the scientific and legal aspects of the research and use of space for peaceful purposes. Article I states that the states are to assist and encourage international cooperation in scientific research; Article III also mentions the development of international cooperation and mutual understanding. Article IX establishes that the member states of the treaty "should be guided by the principle of cooperation and mutual aid."

Thus the Space Treaty has reinforced the principle of cooperation among states as one of the general principles and basic provisions of international space law. However, in the treaty this principle is also not viewed in isolation from the other generally recognized principles or as

an unconditional legal duty. It is closely linked to all the general principles of international law and international space law. The latter, as is known, in accepting the basic principles of international public law, of which it is a part, also has its own elaborated system of general principles.

For this reason the legality of one or another type of activity in space is determined not only by the principle of cooperation, as is stated in the above-mentioned declaration of the Latin American legal experts, but rather by the entire aggregate of the principles of international law (including space law). Only in observing all these principles can national and international activities in space be viewed as conforming to the law.

A number of provisions of the Space Treaty derives from the principle of cooperation and makes it more specific. Among such provisions one could put, for example, the duty to consider the corresponding interests of all other states in carrying out space activities (Article IX); not to create potentially dangerous interference in the activities of other states (Article IX); to provide all possible help to the cosmonauts of other states (Article V); on equal bases to view requests from states to provide an opportunity for them to observe the flight of space objects (Article X); to inform all nations of the nature, course, place and results of their activities in space (Article XI), and certain other provisions.

As in other areas of international relations, the principle of cooperation in space law should be interpreted primarily as the duty of states to collaborate with one another in the area of maintaining international peace and security in developing space. As for the rest, this principle presupposes only the obligation to maximally abet and assist in the development of broad contacts and in carrying out joint work related to the study and use of space for peaceful purposes.³⁶

As for the specific rights and duties in the area of scientific and technical space cooperation, these can derive only from treaties specifically concluded for this purpose by states and intergovernmental organizations. Proceeding from their needs, interests and possibilities, the states, by reciprocal coordination and understandings reinforced in international treaties, determine the nature and degree of their involvement in the various international space development projects and programs. In these treaties the principle of cooperation is concretized and given a real content, and is manifested in definite legal relationships.

The formal consideration of any cooperation as an unconditional international legal obligation, in isolation from the other general principles of space law, would be tantamount to forcing the states to participate in any joint activity in space, even against their national interests. This undoubtedly runs contrary to sovereignty and the sovereign equality of states.

FOOTNOTES

1. The bibliography of Soviet literature on international space law can be found in the Appendix to this book. A worldwide bibliography of literature on space law from 1964 through 1972 has been published in the annuals of the International Institute of Space Law. See: "International Institute of Space Law of the International Astronautical Federation. Worldwide Bibliography," *I'SL, Bibl.*, 1964-1972, nos 1-9.
2. The texts of the basic agreements concluded by the USSR can be found in the Appendix to the book: V. S. Vereshchetin, "Kosmos. Sotrudnichesto. Pravo" [Space. Cooperation. Law], Moscow, Nauka, 1974, pp 145-166. The U.S. agreements signed before 1965 can be found in the book: "United States International Space Programs. Staff Report Prepared for the Committee on Aeronautical and Space Sciences," United States Senate, 30 July 1965. For the series of agreements signed by the Western European nations, see: "Basic Texts, Rules and Regulations, Agreements," in: "Doc. ESRN SP-4," 1969.
3. For this see: L. A. Lunts, "Mezhdunarodnoye Chastnoye Pravo" [International Private Law], Moscow, 1959, p 9; Ye. T. Usenko, "Formy Regulirovaniya Sotsialisticheskogo Mezhdunarodnogo Razdeleniya Truda" [Forms of Regulating the International Socialist Division of Labor], Moscow, 1965, pp 124 et seq.; "Mezhvedomstvennyye Svyazi v Usloviyakh Sotsialisticheskoy Ekonomicheskoy Integratsii" [Interdepartmental Ties Under the Conditions of Socialist Economic Integration], edited by Ye. T. Usenko, Moscow, Yuridicheskaya Literatura, 1973, pp 10 and 107.
4. "Kurs Mezhdunarodnogo Prava v Shesti Tomakh" [Course of International Law in Six Volumes], Vol IV, Moscow, Nauka, 1968, p 239; I. P. Blisichenko, "Vneshniye Funktsii Sotsialisticheskogo Gosudarstva" [The External Functions of a Socialist State], Moscow, Yuridicheskaya Literatura, 1970, pp 139-140; N. V. Mironov, "The Hierarchy of Standards of International Treaties in Their Application in Interstate Law of the USSR," *UCHENYYE ZAPISKI VNIISZ*, No 22, Moscow, 1970, pp 123 et seq.
5. See, for example, Article 66 (Paragraph 2) of the Union Constitutional Law of Austria of 1 October 1920 ("Konstitutsii Burshuaznykh Gosudarstv Yevropy" [Constitutions of European Bourgeois States], Moscow, Inostrannaya Literatura, 1957, p 39).
6. "Kurs Mezhdunarodnogo Prava...", Vol IV, pp 17-18; Ye. T. Usenko, "On the Legal Nature of Indirect Ties Through the Ministries and Departments of the CEMA Countries," "Mezhvedomstvennyye Svyazi v Usloviyakh Sotsialisticheskoy Ekonomicheskoy Integratsii," Moscow, Yuridicheskaya Literatura, 1973, p 14.

7. "Kurs Mezhdunarodnogo Prava...", Vol IV, p 26.
8. The numbering of the articles is given from the text of the Charter of the USSR Academy of Sciences Approved by the General Assembly of the USSR Academy of Sciences of 1 July 1963 with amendments accepted up to 4 March 1975. "Ustaty Akademii Nauk SSSR" [Charters of the USSR Academy of Sciences], Moscow, Nauka, 1975, pp 165-183.
9. For the concept of interinstitutional treaties as a variety of treaties between states, see: N. V. Mironov, "The Legal Nature of International Intergovernmental Agreements," "Mezhvedomstvennyye Svyazi v Usloviyakh Sotsialisticheskoy Ekonomicheskoy Integratsii," p 36.
10. "Mezhvedomstvennyye Svyazi v Usloviyakh Sotsialisticheskoy Ekonomicheskoy Integratsii," p 5.
11. A. N. Talalayev, "Mezhdunarodnyye Dogovory v Sovremennom Mire" [International Relations in the Modern World], Moscow, Mezhdunarodnyye Otnosheniya, 1973, p 12; I. I. Lukashuk, "Storony v Mezhdunarodnykh Dogovorakh" [Parties in International Treaties], Moscow, 1966, p 8; "Mezhvedomstvennyye Svyazi v Usloviyakh Sotsialisticheskoy Ekonomicheskoy Integratsii," pp 12, 15, 29, 66, 171; and so forth. See also: L. Oppenheim, "Mezhdunarodnoye Pravo" [International Law], Vol I, Semivolume 2, Moscow, Inostrannaya Literatura, 1949, pp 426-427; A. Ferdross, "Mezhdunarodnoye Pravo," Moscow, Inostrannaya Literatura, 1959, pp 172-175; H. Blix, "Treaty-Making Power," London, 1960, p 20.
12. "British Year Book of International Law," 1952, Vol 29, p 205. See also: M. Frankovskaya, "The Exchange of Notes as a Form of International Agreement," GOSUDARSTVO I PRAVO, Warsaw, No 1, 1965, pp 5-6.
13. L. N. Mataradze, "Forma Mezhdunarodnogo Dogovora" [The Form of an International Treaty], Tbilisi, 1971, p 20.
14. "Report of the International Law Commission," XVI Session, 1962, p 12.
15. They are also called law-forming, law-setting, or legislative treaties, law treaties, and so forth.
16. They are also termed contract treaties.
17. This division was proposed for the first time by the German international legal experts C. Bergbohm and H. Triepel (C. Bergbohm, "Staatsvertrage und Gesetze als Quellen des Völkerrechts," Dorpat, 1876, p 79 et seq.; H. Triepel, "Völkerrecht und Landesrecht," Leipzig, 1899, p 27 et seq.).
18. H. Briggs, "The Law of Nations," New York, 1952, p 46.
19. S. M. Korkunov, "Mezhdunarodnoye Pravo," St. Petersburg, 1906, pp 111-112.

20. G. M. Tunkin, "Teoriya Mezhdunarodnogo Prava" [The Theory of International Law], Moscow, Mezhdunarodnyye Otnosheniya, 1970, p 108.
21. D. B. Levin, "Osnovnyye Problemy Sovremennogo Mezhdunarodnogo Prava" [Basic Problems of Modern International Law], Moscow, Gosyurizdat, 1958, p 260. In a book published in 1974, D. B. Levin recognizes the law-making nature of any international treaty ("Aktual'nyye Problemy" Teorii Mezhdunarodnogo Prava [Urgent Problems of the Theory of International Law], Moscow, Nauka, 1974, p 75).
22. A. N. Talalayev, "Yuridicheskaya Priroda Mezhdunarodnogo Dogovora" [The Legal Nature of an International Treaty], Moscow, IMO, 1963, pp 140-164.
23. L. Oppenheim, "Mezhdunarodnoye Pravo," Vol I, Semivolume 1, Moscow, Inostrannaya Literatura, 1948, p 409.
24. "United States International Space Programs," pp 122-132.
25. M. Lachs, "Mnogostoronniye Dogovory" [Multilateral Treaties], Moscow, Inostrannaya Literatura, 1960, pp 263-264.
26. See Article 51 of the 1969 Vienna Convention on International Treaty Law.
27. "Enseñanza del Derecho Internacional," UNESCO-CNIE, Buenos Aires, 1972, p 81.
28. UN Doc. A/AC.105/C. 2LSR. 197, 5 April 1973, p 3; M. A. Ferrer, "Earth Orbital Stations," "Proc. XVth Colloq. Law Outer Space," Davis, 1974, pp 210-211; A. A. Cocca, "Remote Sensing of Natural Resources by Means of Space Technology: A Latin American Point of View," in: "Legal Implications of Remote Sensing from Outer Space," Leyden, A. W. Sijthoff, 1976, pp 63-64.
29. S. Bhatt, "International Problems Concerning Use of Space," "Intern. Studies," Jawaharlal Nehru Univ., 1973, Vol 12, No 2, p 269.
30. "Report of the 54th Conference of the International Law Association," The Hague, 1970, p 434.
31. B. Cheng, "Le Traité de 1967 sur l'espace," JOURNAL DU DROIT INTERNATIONAL, No 3, 1968, p 616.
32. "Resolution of the UN General Assembly 2625 (XXV) of 24 October 1970.
33. PRAVDA, 2 August 1975.
34. A. P. Movchan, "Kodifikatsiya i Progressivnoye Razvitiye Mezhdunarodnogo Prava" [Codification and the Progressive Development of International Law], Moscow, Yuridicheskaya Literatura, 1972, p 171.

35. Among the Soviet works on the basic principles of international space law, see: G. P. Zhukov, "Kosmicheskoye Pravo" [Space Law], Moscow, Mezhdunarodnyye Otnosheniya, 1966, pp 23-55; A. S. Piradov, "Kosmos i Mezhdunarodnoye Pravo" [Space and International Law], Moscow, Znaniye, 1970, pp 6-17; "Mezhdunarodnoye Kosmicheskoye Pravo" [International Space Law], Moscow, Mezhdunarodnyye Otnosheniya, 1974, pp 69-94; G. P. Zadorozhnyy, "The International Law Conditions of Space," in "Kurs Mezhdunarodnogo Prava" [Course of International Law], Moscow, Mezhdunarodnyye Otnosheniya, 1972, pp 154-161.
36. An analogous viewpoint has been stated by Ye. P. Kamenetskaya (Ye. P. Kamenetskaya, "Sotrudnichestvo Gosudarstv v Osvoyenii Kosmosa v Ramkakh Mezhdunarodnykh Organizatsiy" [Cooperation Among States in Space Development Within International Organizations], Candidate Dissertation Resume, Moscow, 1976, pp 10-11).

CHAPTER 2: MULTILATERAL COLLABORATION OF THE SOCIALIST NATIONS. THE INTERCOSMOS PROGRAM

1. The International Legal Mechanism of the Intercosmos Program

Intercosmos is a multilateral program of cooperation among the socialist countries in the research and use of space for peaceful purposes. It is one of the manifestations of economic integration among the socialist nations. The collective elaboration of the most important scientific and technical problems which are of interest to a number of states, as well as specialization and cooperation in solving these problems have made it possible for the socialist countries to more fully utilize the achievements of the scientific and technical revolution in the interests of the national economy.

The Intercosmos Program is one of the most successfully developing and effective programs of international cooperation in the study and development of space. The joint development and creation of scientific equipment for earth satellites, spacecraft, geophysical and meteorological rockets, a number of completed theoretical and experimental works in the area of space physics, meteorology, communications, space biology and medicine--these are just some of the results of the joint activities of the scientific and production collectives in the socialist nations under the Intercosmos Program.¹

The birth of this program goes back to 1965, when upon the initiative of the USSR an exchange of letters was made between the heads of government of the socialist nations on a pooling of efforts in the research and use of space for peaceful purposes.

On 14 April 1965, A. N. Kosygin, chairman of the USSR Council of Ministers, turned to the heads of government of the socialist nations in a letter in which he proposed that a study be made of opportunities for collaboration by the socialist countries in such areas as organizing long distance radio communications and television, studying the upper layers of the atmosphere and space using meteorological and geophysical rockets and earth satellites, space physics, biology and medicine. The proposal of the Soviet government was met with great interest in the socialist countries.

In accord with the basic understanding reached by the heads of government in November 1965 and in April 1966, conferences were held in Moscow for the representatives of Bulgaria, Hungary, the GDR, Cuba, Mongolia, Poland, Rumania, the USSR and the CSSR at which they discussed the content, forms and directions of space cooperation considering the scientific and technical possibilities and the extant scientific schools in the individual countries.²

On the basis of the Soviet proposal to make Soviet rocketry available for joint work, particular attention was given to the possibilities of developing scientific equipment in the socialist countries for the satellites and research.

The conferences ended with the passage of coordinated documents which were approved by the governments of the participating nations. The first of them was termed: The Report of the Conference of the Representatives of the Socialist Countries on the Research and Use of Space for Peaceful Purposes of 20 November 1965, and the second: The Report of the Meeting of Experts from the Socialist Countries on the Study and Use of Space for Peaceful Purposes of 13 April 1967.³

In essence these reports were an unique form of international legal agreements by the nine socialist countries and concluded on a level of the representatives of the ministries and departments. These documents expressed the coordinated will of the nations on the basic principles, forms and methods of their collaboration in the development of space. Here the representatives of the nations acted within the limits of the powers granted them by their governmental bodies. Subsequent practice in the development of cooperation on the basis of these documents have also shown that the states recognize them as acts of international legal significance, and follow them in their joint activities.

The second of the reports included a general coordinated program which had been elaborated and approved at the conference for research on the physical properties of space, on space communications, space meteorology and space biology and medicine. Subsequently this program (at a conference of the leaders of the national coordination bodies of the collaborating nations in 1973 at Wroclaw) was given the official name of the "Interkosmos Program."

The mentioned reports also defined the organizational forms of cooperation. In each of the nine nations a decision was made to set up an interdepartmental scientific coordinating body responsible for carrying out the coordinated program, as well as the bilateral and multilateral agreements on individual projects and subjects which were concluded within this program.

In a majority of the nations, the coordinating bodies were set up under the academies of sciences or the ministries (committees) for science and technology. In the USSR, these functions were entrusted to the Council for International Cooperation in the Area of Space Research and Use Under the

USSR Academy of Sciences (the Interkosmos Council) set up in 1966 as the interdepartmental body for coordinating joint work in the area of cooperation in space with foreign countries as carried out by the various ministries, departments, scientific institutions and industrial organizations of the USSR.

The annually held conferences of the leaders of the national coordination bodies approve recommendations and decisions to clarify and develop the joint program, as well as an organizational and other practical questions of cooperation. The conference is chaired by the representative of the nation in which the conference is being held, and he also performs the functions of the chairman until the next annual conference.

The routine activities of implementing the program and the elaboration of new recommendations are made within the permanent combined work groups for the five basic areas of cooperation.

The work groups are directed in their activities by a regulation approved at a conference of leaders of the national coordinating bodies held in Moscow on 14 June 1968.⁴ The conferences of the work groups are held when necessary, but at least once a year, and they rotate among the member nations. The group chairman is selected, as a rule, from among the representatives of the host nation, and performs these duties until the next meeting of the work group. The host nation also assumes the functions of the conference secretariat and bears the organizational expenses related to holding the conference (§3 of the Regulation).

The leadership of the activities of the national units of the work groups and the organizational support for their functioning are entrusted to the national coordinating bodies of the nations.

The basic tasks of the work groups consists in ensuring the fulfillment and further development of the cooperation program in the corresponding areas, as well as in achieving a high scientific and technical level of the joint work. For this purpose the work groups examine and solve scientific and technical questions arising in the course of cooperation. In particular, they regularly examine how the existing protocols (agreements) are being carried out on the specific subjects of cooperation, proposals on carrying out new work are studied, draft agreements are worked out for individual subjects and experiments, plans for the launching of satellites and research missiles are prepared, and so forth.

The results of the conferences of the work groups are drawn up in the form of a general protocol as well as in the form of individual decisions and recommendations. Those which are of a scientific and technical nature become effective immediately for the nations which have voted for their approval. Decisions and recommendations on organizational and financial questions require approval by the national coordinating bodies in accord with the procedure instituted in each nation.

According to the Regulation (§4, Point 3), each nation has the right to state its interests in any question which is examined by the work group. At their conferences, the work groups should endeavor that their decisions and recommendations be approved by all the involved nations. In the absence of unanimity, the decisions and recommendations are effective only for the nations which have voted for them.

A nation's statement of its disinterest in one or another question at the moment of approving decisions and recommendations does not deprive it of the right subsequently to ascribe to these decisions and recommendations. An analogous procedure was adopted subsequently for the decisions and recommendations brought up at conferences of the leaders of the national coordinating bodies. In the last instance, however, for the adoption of the decisions and recommendations a majority of votes by the leaders of the national bodies was required and only questions involving cooperation of just some of the nations would be decided by the approval of the leaders of the national groups from these nations.

One should note certain differences in the procedure for approving decisions and recommendations in carrying out cooperation under the Intercosmos Program in contrast to the procedure existing in CEMA and a number of related organizations.

In accord with Point 3, Article 4 of the CEMA Charter, all the recommendations and decisions in CEMA are approved only with the agreement of the involved member nations, and each country has the right to state its interest on any question examined within CEMA. The recommendations and decisions do not extend to the nations which have declared their disinterest in the given question. However, each of these nations can adhere to the recommendations and decisions approved by the remaining member countries.

Ye. T. Usenko has defined the principle operating in CEMA of unanimity among the interested countries as the principle of "qualified" unanimity, in correctly noting that it provides an opportunity to harmoniously reconcile national and international interests of the CEMA countries.⁵

Under the Intercosmos Program, the decisions and recommendations are also adopted only by the interested nations. Common to both procedures is the fact that they are extended only to the nations which have expressed the agreement to accept them. In either instance the nations which have stated their disinterest at the moment of the approval of the decision or recommendation can subsequently adhere to them.

However, there is a certain difference in the fact that while the CEMA decisions and recommendations cannot be approved with the disagreement of even one interested party, under the Intercosmos Program, the approval of the decisions and recommendations is feasible in such situations.

Thus, in carrying out cooperation under the Intercosmos Program, the principle of unanimity of the concerned parties is not in effect, although the Regulation stipulates particularly that at their conferences the work groups should endeavor that their decisions and recommendations be approved by all interested parties. Such a procedure, without encroaching on the rights and interests of the member nations of the program, makes it possible to carry out effective work under the Intercosmos Program both on a bilateral and a multilateral basis.

The Regulation Governing the Work Groups provides an opportunity for the establishing of direct ties between the head organizations of the countries responsible for carrying out the joint work, in the aim of coordinating the specific duties of the parties and the times for executing the individual stages of the work (§2, Point 2 of the Regulation). In practice such ties are extremely broad and diverse. They are formalized as protocols which in certain instances can be transformed into civil law transactions between these organizations (for example, for the sale or leasing of individual types of equipment).

Prior to 1974, contacts did not exist between the CEMA bodies and the working bodies formed under the Intercosmos Program. The solving of the problems raised in the Comprehensive Program for the Further Deepening and Improvement of Cooperation and for the Development of Socialist Economic Integration Among the CEMA Countries demanded a strengthening and coordinating of cooperation by the socialist countries in all areas. Considering that the work being done under the Intercosmos Program was closely tied to the scientific and technical programs being carried out within the CEMA Committee for Scientific and Technical Cooperation,⁶ in 1974 a decision was made to establish the appropriate contacts between the mentioned Committee and the Conference of Leaders of the National Coordinating Bodies from the Socialist Member Nations of the Intercosmos Program.

Here the basic aim was the concentrating of efforts by the scientists and specialists in the CEMA countries on working out the most urgent problems of modern science, the eliminating of unjustified duplication and parallelism in the carrying out of scientific research under both channels of collaboration, and ensuring the use of the research results in the national economy of the CEMA countries.

The decisions approved at the Eighth Session of the CEMA Committee for Scientific and Technical Cooperation (Sofia, June 1974) and the Conference of Leaders of the National Coordinating Bodies of the Member Nations of the Intercosmos Program (Prague, December 1974) established ties between these bodies in the form of reciprocal information and the holding of consultations on the basic questions of scientific and technical collaboration, as well as in the form of mutual participation in the work of the Committee and Conference.

When necessary, provision was made for the possibility of setting up joint work groups.

Thus, in the first stage of the existence of multilateral cooperation among the socialist nations under the Intercosmos Program, its legal basis was comprised of the fundamental understanding achieved by an exchange of letters between the heads of government and three international legal documents of the type of multilateral interdepartmental agreements (the two reports and the Regulation).

Under these documents, a definite national and international mechanism was set up, and this provides the successful carrying out and development of the approved program. It includes national coordinating bodies, annual conferences of the leaders of the national bodies, conferences of the permanent combined work groups for the basic areas of cooperation, and direct ties between the head national organizations responsible for carrying out the joint work.

The successful development of cooperation under the Intercosmos Program has affirmed the viability of the accepted organizational forms which provide a flexibility in implementing the program and simplify decision taking for the execution of various joint projects by the concerned nations.

The Greetings of the CPSU Central Committee, the Presidium of the USSR Supreme Soviet and the USSR Council of Ministers on the occasion of the completion of the flight of the Soyuz-22 spacecraft with multizone equipment manufactured in the GDR emphasized that "specialists from the socialist countries having pooled their efforts under the Intercosmos Program are making a weighty contribution to space research."⁷

At the same time, the problems related to implementing the Comprehensive Program for the Further Deepening and Improving of Cooperation and for the Development of Socialist Economic Integration Among the CEMA Countries dictate the necessity of providing permanent work to improve the content and further develop the international legal mechanism for cooperation among the socialist countries, including in the area of space.

Among the integration measures of the CEMA countries, an important place is assigned to integration in the scientific and technical area. Its development has been accompanied by the broadening and deepening of ties in science and technology, and by the greater role of these relationships in the international socialist division of labor.⁸

The Comprehensive Program provides that the development of socialist economic integration should be carried out in accord with the principles of socialist internationalism, on a basis of respect for state sovereignty, independence and national interests, noninterference into the internal affairs of the countries, complete equality, mutual benefit and comradely mutual aid. The program stresses that integration is not to be accompanied by the creation of supernational bodies. The necessity of improving the

legal bases of economic and scientific-technical cooperation is noted among the ways and means of integration.⁹

One of the forms for improving the legal mechanism of cooperation in the space area has been the concluding of multilateral intergovernmental agreements on cooperation by the socialist countries in research and the use of space for peaceful purposes. The agreement was signed in Moscow on 13 July 1976 by representatives of the governments of Bulgaria, Hungary, the GDR, Cuba, Mongolia, Poland, Romania, the USSR and the CSSR.¹⁰ This document, without altering the essence of the proven basic organizational principles of cooperation, has given it a more definite treaty basis and facilitates the implementation of the new joint space programs.

The intergovernmental agreement has made it possible to reinforce the acquired positive experience of cooperation and at the same time to more efficiently organize joint work by the socialist countries both in studying outer space as well as in utilizing the results of space research in the interests of the various national economic sectors. Article 1 of the agreement contains an obligation of the agreeing parties to aid in every possible way in the further development of cooperation among the concerned organizations of their nations in the research and use of space for peaceful purposes.

The agreement gives the basic areas of cooperative work. These are: Studying the physical properties of space, space meteorology, space biology and medicine, space communications, and studying the natural environment using space means. It has been stipulated that cooperation will be developed in such forms as the launching of space devices for scientific and practical purposes; the development of equipment for joint space research; the conducting of experiments with geophysical and meteorological rockets; the carrying out of joint observations as well as experimental and theoretical research, the processing, analysis and use of the results of the joint work, the preparation of joint publications; the providing of reciprocal scientific and technical aid; the holding of scientific conferences and meetings, the exchange of scientific-technical documents and information.

Cooperation among the concerned organizations of the member nations of the agreement in the future will be developed on the basis of coordinated programs and plans which define the conditions for carrying out the specific space experiments and research.

The agreement reinforces the principle according to which in carrying out the joint work in space, the states, as a rule, will not make reciprocal payments. Precisely this procedure has been accepted at present in the relationships between the member states of the Intercosmos Program. The rocketry and the services of the command and instrumentation complex are to be provided gratis by the USSR to its partners in cooperation. An overall fund is not created for carrying out the program. Each country finances the work under the program which is to be carried out by its scientific and

production organizations. This includes the development of instruments and devices for spacecraft, satellites and research rockets, the carrying out of scientific research under coordinated programs, data processing, and so forth.

The Agreement has assigned the role of the basic leading body in multi-lateral collaboration to the conference of the leaders of the national bodies, and has also defined the procedure for coordinating the activities of the participants in the joint program during the period between the annual conferences.

With the absence of an international secretariat for the Intercosmos Program, in practice its functions from the outset of cooperation have been carried out by the Intercosmos Council Under the USSR Academy of Sciences. It coordinates the activities of the collectives from various nations in the area of carrying out joint work, it prepares the basic materials for the international conferences, it publishes the informational bulletin, and so forth. The agreement has assigned a treaty nature to these international functions of the Soviet national coordinating body.

The agreement also stipulates that the scientific results of the joint space experiments and research under the understanding of all the nations participating in this can be made available to the scientists and scientific organizations of other countries.

This agreement which is open for signing by other states has reinforced on the intergovernmental level the principles of interstate relations of a new type in the leading area of scientific and technical progress. This is still another proof of the broadening and deepening of scientific and technical cooperation among the socialist countries.

A significant event in the development of the Intercosmos Program was the Soviet proposal for participation of citizens from the socialist countries in the manned flights on Soviet spacecraft and stations. This proposal was discussed in talks and consultations by delegations of the socialist countries in Moscow in July and September 1976.¹¹ As a result of these meetings, it was agreed that in the period of 1978-1983, citizens of all the socialist countries participating in the Intercosmos Program would partake in flights on Soviet spacecraft and stations together with Soviet cosmonauts.

Being the logical extension and development of the Intercosmos Program, these flights will be closely coordinated to the scientific and technological experiments being performed on board the Soviet spacecraft and stations by scientists of the socialist countries.

An analysis of the legal nature of the Intercosmos Program indicates that Intercosmos lacks such attributes of an intergovernmental organization as a special constituent enactment, an international secretariat and a general budget. For this reason, at the given stage, from the viewpoint of

international law, Intercosmos cannot be viewed as an international, inter-governmental organization in the strict sense of this word. At the same time, the presence of intergovernmental agreements on multilateral cooperation and the existence of a precise international mechanism to carry out this cooperation make it possible to speak of Intercosmos as an incipient international organization which in certain instances can enter into international dealings as a single whole, and in this quality can establish contacts with other governmental and nongovernmental organizations.

2. The Joint Activities of States Under the Intercosmos Program in Light of Certain Common Principles of International Space Law

In the international agreements which reinforce the bases of modern space law, it is a question primarily of two types of space activities by the state: those carried out on a national basis and those within the international, intergovernmental organizations. Since Intercosmos is not an international intergovernmental organization in the strict sense of this word, the question arises are the principles and provisions of general international space law applicable to the current activities of states under the Intercosmos Program.

Article XIII of the Treaty on the Principles for the Activities of States in the Research and Use of Space, Including the Moon and Other Celestial Bodies states that the provisions of the treaty are to be applied to the activities of states, regardless of whether or not such activity is carried out by one member state of the treaty or jointly by other states, including within the international intergovernmental organizations."

The word "including" gives reason to feel that activities within the international, intergovernmental organizations are viewed merely as one of the possibly forms of joint activity provided for by the treaty and not as the only form.

The validity of such an interpretation is affirmed by references to the joint activities of states in the area of the research and use of outer space, as are found in other international agreements on space law. Thus, mention of joint activities is found in Articles V and XXVII of the Convention Governing International Liability for Damage. Article V of this convention mentions the solidary liability of participants of a "joint launch," regardless of whether or not this launch is made within an international organization or not. The Convention Governing the Registration of Objects Launched into Space approaches this question from an analogous position; its Article II mentions "two or more launching states."

Joint work by states in the area of space research, when carried out on the basis of bilateral and multilateral agreements, at present plays no less an important role than the activities of the international space organizations. Naturally such work should be regulated by the generally recognized principles of international space law.

Cooperation among the states under the Intercosmos Program represents one type of joint space activity provided for under the current general multi-lateral and international space agreements. The space law principles and procedures stipulated in these agreements apply to it.

From this it follows, in particular, that each of the states participating in the Intercosmos Program in the course of carrying it out may be involved in legal relations with third states not involved in the program.

Such a situation may arise, for example, if an intercosmos satellite causes harm to persons or property of a third state.

The 1967 Space Treaty establishes international liability of states for activities in outer space, regardless of whether or not such activities are carried out by governmental bodies or nongovernmental legal entities (Article VI). The Treaty ascribed the nature of international legal liability to all types of liability in the area of international space law, and under this the principals are the states for, under certain conditions, the international intergovernmental organizations.

Article VII of the Treaty regulates a certain type of liability for space activities which arises in the event that damage is caused by the space object or their component parts. In this specific instance of legal relationships when it is a question primarily of material liability for the losses caused, the liability also devolves on the state.

An important theoretical and practical conclusion stemming from these considerations is that in international space law, the legal relationships of liability can occur only between the principals of international law, regardless of who is the party which has lost directly or is the party bound to restore the losses--the state itself or its physical and legal entities. The legal relationships in which physical or legal entities operate on one or both sides are not regulated by international law and should be viewed separately in accord with the provisions of domestic state and international private law.

Although Article VI of the Treaty which deals with international liability in the broad sense of this word specifically mentions only national activities in space as well as the activities of international organizations, Article XIII of the Treaty extended the provisions of the Treaty to all types of joint activities involved in the research and use of space. In practical terms this means that the states involved in the Intercosmos Program bear international liability so that the activities of the persons and organizations empowered by them are carried out in strict accord with the Space Treaty and the other provisions of international space law.

The questions of financial or material liability under space law have been regulated in detail by the Convention Governing International Liability for Damage Caused by Space Objects. As in the Space Treaty, the Convention

proceeds from the fundamental provision that the principals of legal relationships involving liability are states, and in individual instances, international intergovernmental organizations.

In accord with the Convention, the losses are defined as "the loss of life, corporeal injury or other impairment of health; either the damage or destruction of the property of the states or physical or legal entities or the property of international intergovernmental organizations" (Article I).

In terms of the Interkosmos Program, of important significance are the provisions of the Convention dealing with liability for joint space activities.

Article V (Point 1) of the Convention establishes the principle of solidary liability for any losses caused when two or more states carry out a launch jointly. The concept of solidary liability borrowed from civil law, in terms of the situation examined by us, means that a state which has the right to obtain compensation can at its own discretion demand complete recovery of the loss from any of the participants in the joint launch individually, from several of them or from all of them together.¹²

In line with the provision on solidary liability for damage caused by a jointly launched space object, the question of what must be understood (from the standpoint of liability) as a joint launch of a space object assumes important significance. Neither the Treaty nor the Convention says anything on this question. However, the Convention links the legal relationship of liability with the concept of the "launching state" which is defined as 1) a state which carries out or organizes the launching of a space object; 2) a state whose territory or units are used for launching a space object.¹³ In the understanding of the Convention, in the instances of joint activities, the launching state must be understood not only as the international, intergovernmental organizations, but also the states carrying out such space activities outside the framework of international organizations. Thus, the satellites of the Interkosmos series which have carried equipment from several cooperating countries must be viewed as jointly launched ones. Also arguing in favor of such an interpretation is the circumstance that specialists of the nations cooperating under the Interkosmos Program to one degree or another participate in all stages of the work, including the prelaunch testing, the launching and control of the satellites in flight.

However, certainly in contrast from an international organization where all the members should bear solidary liability, similar liability in the event of damage caused by a space object launched under the Interkosmos Program should be borne not by all the states cooperating in this program, but only those which were directly involved in the given specific launch, for example, the manufacturing of all or a portion of the satellite equipment or by providing the carrier rocket. The broad interpretation of the concept of "launching state" is shared by a number of specialists on international space law.¹⁴

In accord with the Convention, a state which has covered the loss has the right to a claim for exoneration against the remaining participants in the joint launch (Article V, Point 2). The Convention also provides the right of the participants in a joint launch to conclude an agreement on allocating financial obligations among themselves and under which they would bear solidary liability.

In keeping with the further development of the Intercosmos Program and the increase in the number of space objects being launched, obviously it would be advisable to conclude a special agreement between the member states of the program on the right of exoneration [redress] and the allocating of financial obligations which might arise with the legal relationships of solidary liability. Here it is essential to bear in mind that such an agreement, according to the Convention, cannot involve the rights of a state which has suffered losses to demand total compensation for the losses from any of the launching states or all the launching states which bear solidary liability. This provision of international space law has a mandatory character and cannot be abrogated by such an agreement.

Finally, it is essential to point out that the provisions of the Convention, in accord with its Article VII, are not to be applied in the event of losses caused to citizens of the launching state as well as to foreign citizens when they participate in operations related to the space object which has caused the damage, or if they have been invited by the launching state and are in direct proximity of the area of the planned launch or recovery of the object. This circumstance may also necessitate the concluding of a special agreement between the participants of joint space activities for the purposes of regulating the questions of liability for damage which can be caused in similar instances.¹⁵

The above examined problems of liability, of course, are far from exhausting the range of legal relationships for the participants of the Intercosmos Program with third states.

The states carrying out joint activities will enter into legal relationships of reliability primarily on the binding side, as the principals of the obligation to repay the damage caused.¹⁶ However, in accord with the current procedures of international space law, it is also possible to imagine legal relationships in which the participants of the joint program act on the authorized side having the right to demand from third states the execution of certain actions or to refrain from such actions. Such legal relationships can arise, in particular, over the violating of property rights for space objects or their component parts, as well as over the question of returning space objects which have landed on the territory under the jurisdiction of third states.

According to Article VIII of the Space Treaty, the right of ownership to space objects launched into outer space and their component parts remain inviolate during the time they are in space, on a celestial body or upon returning to earth.

The owners of the scientific equipment carried on the satellites of the Interkosmos series are the states (or their legal entities) in which the corresponding equipment has been developed and manufactured. Violations of these rights by any third states as well as by their physical or legal entities can entail the occurrence of legal relationships in which the participants of the Interkosmos Program are the entitled party.

Article V (Point 3) of the Agreement Concerning the Rescuing of Cosmonauts, the Return of Cosmonauts and the Return of Objects Launched into Outer Space establishes the right of the "authorities which have carried out the launch" to demand the return of the space objects or their component parts which have been discovered on the territory of other states or at any other place not under the jurisdiction of any state. This article gives the participants of the Interkosmos Program the right jointly or individually to make the corresponding demand to the third state or states.

This same article provides the right of a state which has incurred expenses in meeting its obligations involved in the detection and return of a space object or its component parts, to demand that these expenses be covered by the "authorities which carried out the launch." In instances of a joint launch, the state which has repaid this expenditure obviously should have the right of exoneration against its partners in the joint activities. Such questions should be regulated by a separate agreement.

In addition, a special understanding or agreement is required between the states working jointly on the Interkosmos Program on the questions of the registration of their common satellites, since space law links definite legal consequences to the act of registration. Among such consequences, according to Article VIII of the Space Treaty, is, in particular, the providing of jurisdiction and control by the registering state over the space object and over any crew of this object while they are in space, including on a celestial body.

The Convention on the Recording of Objects Launched in Space introduces a new element in this rule. Article II of this Convention directly permits the possibility of the concluding of agreements between the participants in a joint launch on the question of jurisdiction and control over the space object and any crew of it, without linking or, more accurately, without compulsorily linking the act of registration to the carrying out of jurisdiction and control.

At the same time, the Registration Convention introduces a compulsory national registration of space objects by entering them in the corresponding register which is kept by the launching state as well as in the UN International registration.

In the event of a joint launch, the states should determine which of them is to enter the given space object in its national register (Article II, Point 2). In the reading of the Convention, the multiple national

registration of space objects is excluded. In practice up to now all the satellites of the Interkosmos series have been registered by the USSR.

Article XI of the Space Treaty envisages the desirability "to the maximum possible and practically feasible degree" of informing the UN Secretary General, the public and the international scientific community of the nature, course, places and results of activities in outer space, including the moon and other celestial bodies. This article of the Treaty lays out definite obligations on informing the world scientific community, and these have been strictly observed by the participants of the Interkosmos Program. But from this also stems the right of Interkosmos to be represented at the UN Committee on the Use of Outer Space for Peaceful Purposes, COSPAR, the International Astronautics Federation and at other international scientific forums involved with the questions of the research and use of space and having both an intergovernmental and nongovernmental nature.

Thus, the multilateral cooperation of the socialist countries in the Interkosmos Program represents one of the types of joint space activities among states, and these activities are completely covered by the principles and procedures of international space law.

In the process of carrying out the Interkosmos Program, legal relationships can arise not only directly among the participants of the program, but also between them and third states. The legal relationships with third states or international organizations should be regulated by the general principles and provisions of international space law.

The absence of an intergovernmental organization in the traditional sense of this word which would be concerned with implementing the Interkosmos Program, is not an obstacle in the regulating of these relationships. Regardless of whether the joint space activities are carried out within the intergovernmental organizations or outside of them, a whole series of legal questions arising in the course of joint activities may require special agreements and understandings between the participants in these activities.

FOOTNOTES

1. For the Interkosmos Program see: B. N. Petrov and M. G. Kroshkin, "Space Physics and Cooperation Among the Scientists of the Socialist Nations," *VESTNIK AKADEMII NAUK USSR*, No 4, 1972, pp 76-84; "Orbita Sotrudnichestva" [Orbits of Cooperation], edited by B. N. Petrov, Moscow, Mashinostroyeniye, 1975; "Po Programme 'Interkosmos'" [Under the Interkosmos Program], edited by G. N. Narimanov, Moscow, Mashinostroyeniye, 1976.
2. PRAVDA, 24 November 1975 and 16 April 1967.

3. For the documents of the Intercomcos Council under the USSR Academy of Sciences, see: "Materialy Soveshchaniya Predstaviteley Sotsialisticheskikh Stran po Voprosam o Sotrudnichestve v Izuchenii i Ispol'zovanii Kosmicheskogo Prostranstva v Mirnykh Tselyakh (14-20 Noyabrya 1965 g., g. Moskva)" [Materials of the Conference of Representatives from the Socialist Nations on the Questions of Cooperation in the Study and Use of Space for Peaceful Purposes (14-20 November 1965, Moscow)], pp 144-145; "Materialy Soveshchaniye Ekspertov--Predstaviteley Sotsialisticheskikh Stran po Issledovaniyu i Ispol'zovaniyu Kosmicheskogo Prostranstva v Mirnykh Tselyakh (5-13 Aprelya 1967 g., g. Moskva)" [Materials of a Conference of Experts from the Socialist Countries on the Research and Use of Outer Space for Peaceful Purposes (5-13 April 1967, Moscow)], pp 11-16.
4. For the text of the Regulation, see the book: "Mnogostoronneye Ekonomicheskoye Sotrudnichestvo Sotsialisticheskikh Gosudarstv (Dokumenty za 1972-1975 gg.)" [Multilateral Economic Cooperation Among the Socialist States (Documents for 1972-1975)], Moscow, Yuridicheskaya Literatura, 1976, pp 268-271.
5. Ye. T. Usenko, "Dvadtsat' Pyat' Let Mezhdunarodnoy Organizatsii Novogo Tipa (Tezisy Doklada na XVIII Vezhegodnom Sobranii Sovetskoy Assotsiatsii Mezhdunarodnogo Prava)" [Twenty-Five Years of a New Type of International Organization (Report Abstracts at the 18th Annual Meeting of the Soviet International Law Association)], Moscow, 1975, pp 4-5.
6. For the Regulation Governing the Committee, see the book: "Mnogostoronneye Ekonomicheskoye Sotrudnichestvo Sotsialisticheskikh Gosudarstv," Moscow, Yuridicheskaya Literatura, 1972, pp 151-155.
7. PRAVDA, 29 September 1976.
8. A. N. Bykov, "Nauchno-Tekhnicheskaya Integratsiya Sotsialisticheskikh Stran" [Scientific and Technical Integration of the Socialist Nations], Moscow, Mezhdunarodnyye Otnosheniya, 1974, pp 8-16.
9. "Kompleksnaya Programma Dal'neyshego Uglubleniya i Sovmeststvovaniya Sotrudnichestva i Razvitiya Sotsialisticheskoy Ekonomicheskoy Integratsii Stran--Chlenov SEV" [Comprehensive Program for the Further Deepening and Improvement of Cooperation and the Development of Socialist Economic Integration Among the CEMA Nations], Moscow, Politizdat, 1971, Section 1, Points 2 and 6.
10. PRAVDA, 14 July 1976. The agreement came into force on 25 March 1977.
11. PRAVDA, 17 July and 15 September 1976.
12. For the concept of solidary liability, see: L. A. Lunts, "Mezhdunarodnoye Chastnoye Pravo," Moscow, Gosyurizdat, 1963, p 187.

13. This definition has been borrowed by the Convention from Article VII of the Space Treaty.
14. See, for example: M. Marcuff, "Traité de Droit International Public de l'Espace," Fribourg--Geneva--Paris--New York., Ed. Univ. Fribourg, Suisse, 1973, p. 350.
15. On the legal relationships of liability under international space law, see: A. A. Zubanov and P. I. Lakin, "Space Activities and the Liability of States," "Tendentsii Razvitiya Kosmicheskogo Prava" (Development Trends of Space Law), Moscow, Nauka, 1971, pp. 188-242; G. P. Zhukov, "Liability for Damage Caused by Space Objects," "Mezhdunarodnoye Kosmicheskoye Pravo" [International Space Law], Moscow, Mezhdunarodnyye Otnosheniya, 1974, pp. 159-193; G. P. Zhukov, "The Problem of Liability for Damage in Space Law," SOVETSKOYE GOSUDARSTVO I PRAVO, No 6, 1965; Yu. M. Rybakov, "Legal Regulation of Liability for Damage Related to Space Activities of States," PRAVOVEDENIYE, No 1, 1967, pp. 115-121; Yu. M. Kalasov, "Otvetsivennost' v Mezhdunarodnom Prave" [Liability in International Law], Moscow, Yuridicheskaya Literatura, 1975; A. A. Zubanov, "Mezhdunarodnaya Kosmicheskaya-Pravovaya Imushchestvennaya Otvetsivennost'" [International Space Law Material Liability], Moscow, Nauka, 1974; J. Bajski, "Odpowiedzialnosc miedzynarodowa za szkody wyrzadzone przez obiekty kosmiczne," Warsaw, 1974.
16. The reverse case is possible if damage were to be caused to a space object launched under the Interkosmos Program.

CHAPTER 3: BILATERAL COOPERATIVE PROGRAMS OF THE USSR WITH OTHER COUNTRIES

Agreements with the United States

The state and prospects of international cooperation in space development to a significant degree depend upon the development of ties in this area between the USSR and the United States. Although the first contacts between Soviet and American scientists were established at the outset of the space age, at that time they came down chiefly to the exchange of obtained scientific results at various international conferences and meetings.

The first bilateral space agreement between the USSR and the United States was concluded in the form of an interdepartmental agreement of the USSR Academy of Sciences and the National Aeronautics and Space Administration (NASA) on 8 June 1962. Three years later, on 8 October 1965, this was supplemented by an agreement between the same organizations on the preparation and publication of a joint work on space biology and medicine.¹

In accord with these agreements, in the middle of the 1960's, Soviet and American scientists and specialists conducted certain joint projects. Since 1964 a direct communications channel has operated between the world meteorological centers established in Moscow and Washington. Over this channel, around-the-clock information is transmitted on the state of the atmosphere on our planet; this information is used in the operational weather service of a number of nations. Moreover Soviet-American experiments have been carried out to establish communications in space using the Echo-2 passive communications satellite, and there has been an exchange of results of measurements for the purpose of drawing up maps of the earth's magnetic field. Work has been started on writing a joint work "Osnovy Kosmicheskoy Biologii i Meditsiny" [Principles of Space Biology and Medicine].

As a whole, cooperation during these years was extremely limited, and did not correspond to the scales of the Soviet and American national programs or to the role of these nations in the study and development of space. A shift toward the development and deepening of Soviet-American cooperation was noted in 1970-1971. During these years there was a series of

meetings and talks by scientists and technical specialists of both countries, and at which they discussed the opportunities of cooperation in the area of developing joint rendezvous and docking devices for spacecraft and stations, as well as in a broader area of scientific space research. Of particular significance were the talks between the president of the USSR Academy of Sciences Academician M. V. Keldysh and the temporary NASA director, Dr J. Low in January 1971; these ended with the approval of the "Final Document on the Results of Discussing the Questions of Cooperation Between the USSR Academy of Sciences and NASA."

These meetings and talks prepared the grounds for the conclusion of an Agreement Between the USSR and United States on Collaboration in the Research and Use of Space for Peaceful Purposes during the visit of the U.S. president to Moscow. It was signed on 24 May 1972 by A. N. Kosygin, chairman of the USSR Council of Ministers, and the U.S. President R. Nixon.²

The agreement concluded for a period of 5 years with the possibility of subsequent renewal envisaged the development of cooperation between the two countries in three basic areas:

1) Assistance in carrying out the understanding between the USSR Academy of Sciences and NASA stated in the "Final Document" of 21 January 1971 on the coordinating or joint execution of experiments, as well as the exchange of information in a number of areas of space research;

2) The carrying out of work to develop joint equipment for the rendezvous and docking of Soviet and American manned spacecraft and stations, including the first joint experimental flight of ships of the Soyuz and Apollo type for testing out such systems;

3) Aiding international efforts and cooperation between the two parties in solving international legal problems related to the research and use of space for peaceful purposes in the name of strengthening law and order in space and further developing international space law.

The "Final Document on the Results of Discussing Questions of Cooperation Between the USSR Academy of Sciences and NASA" of 21 January 1971, as mentioned in the Agreement, provides collaboration in the area of research on outer space, the moon and planets, as well as in the area of the problems of space meteorology, the studying of the natural environment from space, as well as space biology and medicine.

The understanding between the USSR Academy of Sciences and NASA provides for the coordination of research on these subjects and problems, an exchange of obtained scientific information, and in certain instances the conducting of joint experiments. A number of work groups has been set up for elaborating and carrying out the corresponding cooperation programs.

Let us briefly take up the content of the work which is being done under the Soviet-American agreement.

The USSR Academy of Sciences and NASA have exchanged samples of lunar earth returned by both countries from various areas of the lunar surface. Specialists concerned with studying the moon have made available to each other catalogs of maps and photographs of the moon, and have coordinated the basic principles for compiling such maps in the future.

A whole series of joint conferences, seminars and working meetings have been held by Soviet and American scientists on the questions of studying the moon and planets of the solar system, as well as studying the magnetosphere of the earth and other questions.

There is a weekly exchange of operational data from the rocket weather sounding from the USSR and American stations, and this makes it possible to obtain a comparative map of the meteorological situation in the eastern and western hemispheres.

The work group studying the natural environment has carried out a number of coordinated observations using the data of ground, aircraft and satellite equipment. This work is carried out within five sections: geology and geomorphology; vegetation, soil and land utilization; water, snow and glaciology; microwave technology; oceanology.

Specialists in the area of space biology and medicine are jointly examining the materials of the biomedical research carried out during the space flights, and they are working out coordinated recommendations on the procedures for pre- and post-flight examination of the cosmonauts. The publishing of the joint three-volume work "Osnovy Kosmicheskoy Biologii i Meditsiny" has been completed. American scientists have taken an active part in the experiments on the Soviet Kosmos-782 biological satellite.

For a number of years, the work of developing joint rendezvous and docking equipment for the Soviet and American manned spacecraft and stations has held a central place in Soviet and U.S. collaboration in space. In terms of its complexity and scale, this was the largest project ever carried out on the basis of bilateral cooperation of states in developing space. Both countries set the task of designing, creating and testing under real flight conditions new technical devices needed for the interaction of spacecraft and stations from different countries.

The goal of this work was dictated by a desire to ensure the safest conditions for manned space flights and to create a technical possibility of aiding one another in the event of an emergency situation. The development of compatible docking systems also opened the way to conducting future joint scientific research with the orbiting of cosmonauts from various countries.

The increase in the range of space flights and the duration man stayed in space could not help but be accompanied by concern for raising the safety of manned flights. In precisely the same way that sailors over the centuries have sacredly carried out the established custom of providing any possible aid to a ship in distress, the humane rules of mutual help have also been born in space navigation.

In the past mutual aid in space was impossible since the systems ensuring the rendezvous and docking of spacecraft launched by the USSR and United States were incompatible. Although both sides possessed such systems and repeatedly used them during space flights, they were unsuitable for conducting joint operations in space.

On the basis of common principles and coordinated demands, specialists from the USSR and United States carried out the work of designing and developing spacecraft rendezvous systems and docking devices, testing them initially on the ground and later, in July 1975, under the conditions of the joint experimental flight of a Soviet spacecraft of the Soyuz type and an American craft of the Apollo type with the interchanging of cosmonauts.

The implementation of the plan involved the solution to a whole series of involved technical, organizational and other problems. Close interaction was required among the designers, the cosmonauts, the control and instrumentation facilities and the mission control centers. The sides jointly worked out over 1,500 technical documents. Permanent mixed work groups were formed for the basic areas of work, and their meetings alternated between the USSR and United States.³

From the example of the Soyuz--Apollo Project it is possible to trace how closely law and technology are intertwined in the area of international collaboration in space research.

The 1967 Space Treaty provides the duty of cosmonauts from one state to give any possible aid to cosmonauts of other states in carrying out their activities in space (Article V). In order that this provision of the Treaty not remain a dead letter, the states launching spacecraft should equip them with devices making it possible when necessary to execute a rendezvous and docking of spacecraft from various countries. Precisely this is the aim of the Soviet-American understanding stated in Article 3 of the Agreement of 24 May 1972.

In addition to this, the practical realization of this program posed new legal questions which were settled on the level of the authorized departments. Among such questions were: the interaction of the control centers during the flight, the subordination of the cosmonauts and astronauts in moving into a spacecraft of another nation, the procedure for registering the ships, informing the world community on the course of preparations for and execution of a joint flight, patent rights to the results of the scientific experiments, and so forth.

Law and technology, thus, in carrying out the Soyuz--Apollo Project interacted closely.

A reflection of the relationship of scientific-technical and legal questions in the area of cooperation is the fact that the scientific and technical agreement between the USSR and United States being examined here contains an article which states: "The parties will aid international efforts aimed at solving international legal problems of the research and use of space for peaceful purposes for the sake of strengthening law and order in space and for the further development of international space law, and they will cooperate among themselves in this area" (Article 4).

Here a dual obligation of the parties is found: 1) jointly with other states to assist in solving the international legal problems of the research and use of space, including the further development of international space law; 2) cooperation amongst themselves in solving these problems.

Indicative is the fact that the designated obligation has been assumed by states which not only hold a leading position in space research and international cooperation in this area, but also embody opposite social systems.

In the modern age, only those provisions of international law which are recognized and observed by a broad range of states can be considered among the generally recognized. In the law-making process in the area of space law, as one of the areas of international public law, a particular role and responsibility are placed on the USSR and United States. The maintaining of international law and order in space depends largely upon them.⁴

The practical realization of the assumed obligations in the area of solving international legal problems related to the research and use of outer space obviously should occur by the holding of bilateral consultations as well as active search for mutually acceptable solutions in examining the corresponding questions at international forums, and above all in the various UN bodies.

Article 4 of the Agreement should play an important role in the progressive development of international space law and in strengthening space law and order.

The Interstate Agreement Between the USSR and United States on Cooperation in the Area of Space, in containing both an understanding on a specific compatible plan as well as broader and more extended obligations, was possible only under the conditions of an overall improvement in the political relations between the two countries. The broadening of contacts and cooperation between the Soviet and American scientific and production organizations, the carrying out of joint projects, and cooperation in the legislative sphere, in turn, should contribute to the further development of relations of mutual trust and a general lessening of international tension.

However the forces which are working actively in the opposite direction in American political life have not overlooked the Space Agreement. In 1974, an extensive historical sociological study entitled "Soviet Cooperation in Space" appeared in the United States.⁵ Its authors were the director of the Washington Department of the Center for Advanced International Studies at the University of Miami, D. Harvey, and a coworker from this center, L. Piccoritti, while the foreword to it was written by the former U.S. Ambassador to the USSR, F. Kohler.

The book was published during the period of the most intense preparations for the joint flight under the Soyuz--Apollo Project, active exchanges of specialists and scientific-technical information on this project, as well as frequent meetings between the technical directors of the project and the leaders of NASA and the USSR Academy of Sciences.

In this situation the former U.S. Ambassador to the USSR stated in the press that the USSR would endeavor to extract unilateral benefits from space cooperation, and that the main element of the Soyuz-Apollo Project (the development of joint rendezvous and docking devices for spacecraft and stations) was "that area where the USSR was obviously having particular technical difficulties," and that as a whole space cooperation was essential for the USSR to use it as a precedent for access to American technology.⁶

Such an interpretation of the Soviet-American Agreement in the space area has nothing in common with the tasks of improving relations between the two states. It is aimed at undermining these relations and at distorting the essence of the achieved understanding. The absurdity of the assertions by F. Kohler on any particular Soviet interest in gaining access to American docking devices becomes clear if one considers that both sides rejected as unsuitable the devices which previously existed in both nations for joint space operations by ships of different countries, and they set as their basic mission the joint development and testing of a completely new docking device under real flight conditions. The reciprocal interest in this question was not disputed by any of the specialists and was repeatedly affirmed in the official statements of the NASA representatives.⁷

The successful implementation of the Soyuz--Apollo Project was of historical significance as a symbol of the improvement in Soviet-American relations on the basis of the principles of peaceful coexistence. The flight of the Soyuz and Apollo spacecraft had a major political impact.

In the course of carrying out the project, complicated problems were solved such as the development of compatible rendezvous and docking equipment (this would be of great significance for future manned space flights), the transfer of cosmonauts from ship to ship with a different atmosphere, the interaction of the ship locating and rendezvous systems, the planning of the space flight from two centers located several thousand kilometers apart.

During the flight, a whole series of joint and autonomous experiments was run in the area of astrophysics, biology and materials engineering. Scientists and engineers, the ship crews and specialists from the control centers brilliantly carried out their missions and completely fulfilled the planned program for preparing and carrying out the flight. Of invaluable significance was the experience acquired in having large collectives of specialists from different nations work together for the further development of international scientific and technical cooperation. Based on this experience, the USSR Academy of Sciences and NASA are presently studying the possibility of carrying out a new large-scale joint project for the study of space for peaceful purposes.⁸

The Agreement with France. France was the first nation in the capitalist world with which the USSR signed an intergovernmental agreement on cooperation in the research and development of space. Important prerequisites existed for this: the established relations of trust and agreement between the two countries and the presence in France of a large national space program.

In possessing its own space centers, a developed aerospace industry, missiles, a space center in Guiana and a network of satellite tracking stations, France held third place in the world in terms of the scope of space research. At the same time it was carrying out an extensive program of international cooperation on both a multilateral and bilateral basis.

The agreement between the USSR and France on cooperation in the area of the study and development of space for peaceful purposes was signed by the ministers of foreign affairs of both states on 30 June 1966 during a visit of Gen de Gaulle to the USSR.⁹

The preamble of the agreement emphasized the importance of the study and development of space for peaceful purposes and pointed out that cooperation between the USSR and France in this area conforms to the spirit of traditional friendship between the Soviet and French peoples, and would contribute to a further broadening of cooperation between the two nations and to the establishing of European scientific and technical cooperation.

The governments of both states agreed on the preparations for and implementing of a bilateral cooperative program and on the providing of support and help to the concerned organizations of both countries for these purposes.

The agreement defined the basic areas of cooperation; these were: the study of space, including the launching of a French satellite by the USSR; space meteorology using the most modern scientific equipment; the study of space communications via earth satellites; the exchange of scientific information, trainees, scientific delegations and the organizing of conferences and symposiums. By mutual understanding the cooperation would be extended into other areas as well. Space biology and medicine became one such new area of cooperation.

A legal mechanism was not established which would ensure the development and fulfillment of the cooperative program. It included joint work groups from the representatives of scientific and technical organizations, and these would be given the right to sign working protocols which determined the content and conditions of cooperation. Scientific information obtained in carrying out the joint experiments should be accessible to both sides and should be turned over at acceptable times. The right of first publication belonged to the authors of the experiment.

The agreement was concluded for a period of 10 years and would remain in effect until denounced by one of the sides. Amendments and supplements could be made to it with the reciprocal agreement of the sides.

The viability of this agreement has been affirmed by the successful course of its fulfillment, and by the significant scientific results obtained by the Soviet and French scientists in conducting the joint experiments.

The organizing of the practical work related to implementing the agreement was entrusted to the Intercosmos Council and to the National Space Research Center of France (CNES). For each of the mentioned areas of cooperation, joint work groups were set up by them with scientists and specialists from both nations. The sessions of the work groups were to be held annually, alternating between the USSR and France. The specific program of joint work, the reciprocal obligations of the sides as well as the times and methods of carrying out the work were to be established in the working protocols. The most important questions were to be incorporated in the general protocol which would be signed by the intercosmos and CNES leaders.

In those instances when the obligations of the parties had a broader and more extended nature, special interdepartmental agreements could be concluded for developing the general agreement. Sometimes they would be reinforced by an exchange of notes between the governments. On such grounds, on 12 October 1969, intercosmos and the CNES signed a special Soviet-French protocol on organizing a joint study of photographic observations of space objects on the Kerguelen Islands (a French possession in the Indian Ocean). On 12 September 1972, the weather services of both countries together with intercosmos and the CNES signed an agreement to organize the launching of Soviet and French meteorological rockets on these same islands for the purpose of a joint study of the upper layers of the atmosphere along a hypothetical meridian of 60-70° E. long.

On 12 January 1973, a protocol was signed for conducting joint scientific experiments in 1974-1975 under the Araks Project on the Kerguelen Islands and in Arkhangel'skaya Oblast.

The mentioned agreements define the rights and duties of the sides not only on the essence of the jointly conducted research, but also on the questions of utilizing the obtained scientific results, the conditions for the sojourn of personnel and the locating of property on the territory of the other country, and the liability for damage caused to personnel or property.

Thus, the agreement on organizing the launching of weather rockets on the Kerguelen Islands established that Soviet and French personnel during the stay on the Kerguelen Islands was to be under the laws and rules in effect there, and was to be under the authority of the district chief (Article 10). Each side was to assume responsibility to repay losses which might be caused to its citizens and property, with the exception of flagrant violations or intentional actions and oversights the blame for which lay on the other party (Article 11).

Important practical results were obtained in all areas of cooperation as outlined by the 1966 Intergovernmental Agreement.

The French scientific devices carried on the Soviet Mars and Venera stations and on the Prognoz and Orel satellites, studied interplanetary and near space. Laser scanning of the moon was carried out using French reflectors mounted on moon vehicles. Soviet carrier rockets orbited two French MAC satellites designed for conducting technological research, as well as the astronomical Sneg-3 satellite.

About 50 Soviet weather rockets with Soviet and French scientific equipment were launched on Hayes Island (Zemlya Frantsa-Iosifa) for the purposes of conducting research in the area of space meteorology and aeronomy. Joint rocket experiments were also conducted in other points of the world.

The scientific experiments, the choice of which is determined by the mutual interest of both sides, are carried out not only with Soviet space devices but also on French geophysical rockets and high-altitude balloons. Thus, in 1975, Soviet and French scientists conducted a major joint experiment in magnetically matched regions of the world under the name of Araks. This experiment which opened the path to an active influence of man on the processes occurring in the earth's magnetosphere was carried out using French rockets and electron guns developed in the USSR.¹⁰

The work of Soviet and French specialists in the space communications area has made it possible to ensure high-quality experimental TV program broadcasts.¹¹

On 18 October 1974, on the occasion of the 50th anniversary of the establishing of diplomatic relations between the USSR and France, a Soviet-French conference was held in Kiev, and at this the basic scientific results were reported obtained in the course of the cooperation between the two countries in the area of the research and use of space.

During the Soviet-French summit meetings, both sides repeatedly expressed their satisfaction with the course of carrying out the agreement and their intention to deepen the mutually advantageous cooperation.¹²

The Agreement with India. The first contact between Soviet and Indian specialists on the questions of cooperation in space research were established

at the outset of the 1960's on the occasion of the decision of the Indian Government to develop an international testing range on its territory at Thumba for the rocket sounding of the atmosphere. The location of this testing range on the geomagnetic equator running an equal distance between the magnetic poles of the earth made it possible to conduct important scientific experiments at it to study the atmosphere and magnetosphere of the earth.

Several nations were involved in organizing the range and conducting scientific research at it. On 17 January 1964, an agreement was signed between the Main Administration of the USSR Hydrometeorological Service and the Atomic Energy Department of the Indian Government in accord with which the Soviet Union would provide India a helicopter, an electronic computer, and several devices for testing and inspecting equipment for equipping this range. Both organizations agreed to carry out at the range a scientific research program of mutual interest, and that the final results of all the experiments would be made available to the world scientific community.

In developing this agreement, on 14 May 1970, the same organizations signed an agreement on the systematic rocket sounding of the atmosphere from the Thumba range using Soviet meteorological rockets. This work is not only of scientific but also great practical significance. Initially both Soviet and Indian specialists participated in carrying out the joint experiments and in the launching of the rockets. At present, after corresponding training, the Soviet engineers of the range launch these rockets independently. The results of the joint rocket experiments have been made available to the world geophysical data centers.

Although the first rocket was launched from the Thumba range in 1963, the official opening of the range was after the full completion of construction in February 1968. At present the range has become a major international research and training center. In accord with the Resolution of the UN General Assembly 2135 (XII) of 21 December 1965, the Thumba range is under the aegis of the United Nations.

The next important step along the path of deepening and developing Soviet-Indian cooperation in the study of space was taken on 12 May 1972, when the USSR Academy of Sciences and the Indian Space Research Organization of the Indian Government signed an agreement on the launching of an Indian satellite on a Soviet carrier missile.¹⁶

This agreement provided for the launching of a scientific satellite designed and manufactured in India from Soviet territory on a Soviet carrier missile. The specific technical questions related to carrying out the project were to be settled by a joint working group of specialists from both countries.

The USSR also provided gratis a carrier missile and launching equipment for carrying out the joint project, and also provided the necessary maintenance and technological aid.

The successful launching of the first Indian satellite was held on 19 April 1975. In the course of the work involved in the development, launching and control of this satellite, Indian scientists and specialists acquired skills in the designing and manufacturing of complex space devices, as well as controlling them during a flight.

In 1976, the USSR Academy of Sciences and the Indian Space Research Organization of the Indian Government signed an agreement for launching a new Indian satellite on a Soviet carrier missile in 1978; this satellite was designed for conducting experiments to observe the earth's surface from space.

The Declaration on the Further Development of Friendship and Cooperation Between the USSR and India notes that the launching of the first Indian satellite with a Soviet missile from Soviet territory and the concluding of a new agreement on the launching of a second Indian satellite opened up a new chapter in scientific and technical cooperation between the two countries.¹⁵

The Intergovernmental Agreement on the Further Development of Economic and Trade Cooperation Between the USSR and India signed on 29 November 1973 also emphasizes the great significance which the sides give to scientific and technical cooperation, including in space research. The agreement contains the obligation of the sides to further develop and strengthen this cooperation.¹⁶

International Agreements on Setting Up Satellite Tracking Stations. By the beginning of 1977, the USSR had bilateral agreements on setting up satellite tracking stations with Egypt, Bulgaria, Bolivia, Hungary, Equatorial Guinea, India, Cuba, Mali, Mongolia, Poland, Somalia, Romania, the Sudan, France, the Republic of Chad, the CSSR, Ecuador and Japan.

Virtually all these agreements were concluded on an interdepartmental level. On the Soviet side, as a rule, they were signed by the USSR Academy of Sciences, and for the other partners, on behalf of the academy of sciences or the ministries (committees) for science and technology. The international legal nature of these agreements, aside from all else, is affirmed by the circumstance that all of them have been concluded with the knowledge and agreement of the governments of the corresponding countries. The talks on concluding the agreements in a number of instances were conducted through diplomatic channels. These interdepartmental agreements which were reinforced by an exchange of diplomatic notes move to an intergovernmental level.

The concern of the designated agreements is the establishing and operating of joint satellite tracking stations on the territory of the corresponding nations. The technical equipping of these stations is carried out by the USSR.

Satellite observations using optical methods (visual, photographic, photometric and laser) make it possible to establish geodetic relationships at great distances, to provide an ephemeris survey needed for predicting the movement of satellites and controlling the work of their scientific equipment, and to study the density of the earth's atmosphere and the irregularity of the earth's gravitational field. The conducting of such research is only possible with the simultaneous and coordinated work at various points of the earth, and requires the setting up of a worldwide network of tracking stations.

As can be seen from the given lists of nations with which agreements have been concluded, joint stations have been organized on the territory of a number of capitalist, socialist and developing nations.

The joint work of scientists from the socialist countries on optical satellite observations began in 1957. This work formed the basis for further cooperation among the socialist countries in the study and development of space. Initially such work was based not on official agreements, but rather on a direct understanding between scientific collectives and groups of scientists in different nations.

In November 1963, the first coordinating meeting of the Commission on multilateral cooperation between the academies of sciences of the socialist countries was held in Leningrad on the given problem. Since then coordinating conferences have been held annually. They rotate among the nations participating in the cooperation. Since 1969, this work which is under the leadership of the Astronomical Council of the USSR Academy of Sciences in the USSR, has become an organic part of the Interkosmos Program.¹⁷

On the basis of bilateral agreements concluded in 1967-1973 by the academies of sciences of the socialist countries with the USSR Academy of Science, the USSR has supplied the joint stations set up in these countries with the scientific equipment, and the equipment is completely operated by local personnel.

Among the capitalist countries, cooperation in this area has developed with the greatest results with France. For a number of years Soviet-French satellite tracking stations have been operating on Kerguelen Island and in French Guiana. Upon the initiative of scientists from both nations, in recent years major international programs have been carried out in the area of satellite geodesy (Isajecs, Arctic-Antarctic, and others). Developing out of Soviet-French cooperation, these programs subsequently were shifted under the aegis of the COSPAR international nongovernmental organization, and many countries have participated in them. For example, under the Isajecs program, simultaneous observations have been carried out at 53 stations located in various parts of the world.

The agreement between the USSR Academy of Sciences and the Indian Space Research Organization of 20 November 1975 can also serve as an example of a bilateral agreement with the developing nations.

The agreement concluded for a period of 5 years with the possibility of an automatic extension provides for the organizing of a permanent station for photographic observations of space objects in India.

The station has been set up as a joint scientific institution of the two countries, and it carries out systematic photographic observations of space objects over an extended period of time. The observations at the station are made jointly by Soviet and Indian specialists under coordinated programs. With the understanding of the sides, coworkers from scientific institutions of other nations may be permitted to conduct observations. The results of the observations made at the station are used by the Soviet and Indian scientific organizations on equal grounds. The agreement provides the obligation of the USSR Academy of Sciences to supply the station with a complete set of scientific equipment, to ensure its regular technical maintenance, to send specialists for working at the station along with Indian scientists, and so forth. The agreement regulates in detail the financial and other obligations of the parties in building and operating the station.

At present, the station in India, aside from the standard Soviet AFU-75 device for photographic observations is equipped with a laser range finder, an unique instrument developed jointly by the scientific organizations of a number of the socialist countries. This device makes it possible to measure distances to the satellites with an accuracy of up to 1 m.

The legal status of the other nations located in the developing countries is the same as the one just examined. In organizing joint stations on the territory of these countries, the USSR is carrying out not only the tasks posed by its own national space research program, but also provides substantial aid to the designated countries in training their own national personnel, and in involving states in the research and use of space where the economic and scientific-technical development level of these states does not allow them as yet to conduct independent work in space.

As has been noted by specialists, satellite geodesy makes it possible to link islands with continents, to unite the geodetic grids of the continents across seas and oceans, and to study the earth as a single whole. Because of satellites, the external appearance of the earth has now been studied 10-20-fold better than before 1957.¹⁰

The bilateral agreements are the most widely found form of international cooperation in the study and use of space. These are widely used by many countries in preparing and carrying out international space programs. The specific content of the bilateral space agreements concluded by the USSR is extremely diverse. In particular, on the basis of such agreements, the largest joint space programs are being carried out with the United States, France and India. The scale and political significance of these programs can be seen from the fact that agreements on scientific and technical cooperation in the development of space have been concluded with the designated countries on an interstate and intergovernmental level.

The most numerous group of bilateral agreements, mainly interdepartmental ones, has been concluded by the USSR for the purpose of setting up a network of satellite tracking stations on foreign territories.

FOOTNOTES

1. A. A. Blagoderavov, "Soviet and U.S. Cooperation in Space Research," *VESTNIK AKADEMII NAUK SSSR*, No 10, 1964, pp 82-84. For the text of the first agreement, see: "United States International Space Programs. Staff Report Prepared for the Committee on Aeronautical and Space Sciences," United States Senate, 30 July 1965.
2. *VERKOMITI VERGOVNOGO SOVETA SSSR*, No 23, 1972, p 194. For the discussion of this agreement in the U.S. Congress, see: "U.S.-USSR Cooperative Agreements. Report of the Subcommittee on International Cooperation in Science and Space," August 1972, Washington, U.S. Government Printing Office, 1972.
3. For more detail on the project, see: "'Soyuz' i 'Apollon'" (Soyuz and Apollo), edited by K. D. Bushuyev, Moscow, Politizdat, 1970.
4. On the role of the USSR and United States in creating the standards of international law, see: G. I. Tunkin, "Teoriya Mezhdunarodnogo Prava," Moscow, Mezhdunarodnyye Otnosheniya, 1970, pp 310-311.
5. D. L. Harvey and L. C. Ciccoritti, "U.S.--Soviet Cooperation in Space," Center for Advanced International Studies, University of Miami, 1974.
6. *Ibid.*, pp XXVII-XXVIII.
7. *PRAVDA*, 21 March 1973; 9 January 1974, 23 March 1974, 13, 21 September 1974, etc.
8. With the lapsing of the Agreement of 24 May 1972, a new Agreement between the USSR and United States on Cooperation in the Research and Use of Space for Peaceful Purposes was signed in Geneva on 18 May 1977 and came into force on 24 May 1977 (for the text of the Agreement, see: *IZVESTIYA*, 31 May 1977). A majority of the articles of the new Agreement were maintained in their former wording and with the previous numbering, with the exception of Article 3, where instead of the concluded Soyuz--Apollo Project, it was a question of a further development of cooperation in the area of manned space flights in accord with the agreement concluded for these purposes on 11 May 1977 by the USSR Academy of Sciences and NASA.
9. *PRAVDA*, 1 July 1964.

10. PRAVDA, 5 February 1975.
11. For the experiments conducted in accord with the Soviet-French Agreement, see: Yu. I. Gal'perin and L. A. Vedeshin, "Soviet-French Cooperation in Space Research," VESTNIK AKADEMII NAUK SSSR, No 11, 1972, pp 84-92; "Orbity Sotrudnichestva," edited by B. N. Petrov, Moscow, Mashinostroyeniye, 1975; J. C. Hussen, "Coopération franco-soviétique pour l'étude scientifique de l'espace," LE COURRIER DU CNES, No 10, 1973, pp 29-32.
12. "Desyat' Let Franko-Sovetskogo Kosmicheskogo Sotrudnichestva" [Ten Years of Franco-Soviet Space Cooperation], joint publication of Intercosmos and CNES, Imprimerie du Sud, Toulouse, 1976.
13. PRAVDA, 31 October 1971; 13 January 1973; 8 December 1974; 18 October 1975.
14. For the text of the agreement see the Appendix to the book: V. S. Vereshchetin, "Kosmos. Sotrudnichestvo. Pravo," Moscow, Nauka, 1974, pp 160-161.
15. PRAVDA, 14 June 1976.
16. For the text of the agreement, see: PRAVDA, 1 December 1973.
17. A. G. Masevich and N. P. Slovokhotova, "Scientific Research Using Satellite Observations," NABLYUDENIYA ISKUSSTVENNYKH SPUTNIKOV ZEMLI, Sofia, No 7, 1967 (1968), pp 205-213.
18. A. S. Masevich and G. K. Tatevyan, "Soviet-French Cooperation in Space Geodesy," in the book: "Desyat' Let Franko-Sovetskogo Kosmicheskogo Sotrudnichestva," p 111.

CHAPTER 4: "SPACE INTEGRATION" IN WESTERN EUROPE

At the beginning of the 1960's, the nations of Western Europe set out on a policy of joint space development. For this purpose two intergovernmental organizations were set up: the European Space Research Organization (ESRO) and the European Launcher Development Organizations (ELDO). Later another two Western European associations arose on an intergovernmental level. These were the European Communications Satellite Conference and the European Space Conference. In addition, the Western European industrial firms which are interested in obtaining large orders paid for by the states, and not wishing to fall behind their American competitors, have set up their own Eurospace Association, as well as a number of industrial consortiums.¹

Within relatively short times, an infrastructure of national and international scientific and technical institutions was organized in Western Europe, and development and implementation were started on a series of joint projects and programs, that is, everything which in political terminology has been termed "space Europe." However, as was rightly noted by the well-known French writer on international affairs C. Colliard, "the results of European cooperation in the space area have been extremely disappointing."² Antagonistic contradictions inherent to imperialist integration have been clearly manifested in the attempts to develop a uniform policy among the Western European nations in the area of the research and use of space.³ At the same time, it must be pointed out that after 1973, with the reaching of compromise agreements on a number of joint programs, as well as on organizational questions related to Western European space cooperation, a new stage was started in the pooling of efforts by the nations of this region in space development.

The official birthday of ESRO is considered to be 30 March 1964, when its constituent convention signed on 12 June 1962 went into force.⁴ The talks on setting up ESRO continued for several years. The most active role in the course of the talks was played by Great Britain, France and West Germany. The task posed here was to provide the national research groups of the Western European nations with the technical possibilities for launching the scientific instruments developed by them into space.

In drawing up the ESRO program, even before the official establishing of the organization, the basic principal of its activities was defined, namely: the development and manufacturing of scientific equipment for the satellites, should, as a rule, be carried out by the institutions of the member nations of the organization and paid for from their national currencies. The development and creation of the satellites themselves, their support systems as well as the acquiring of carrier missiles were to be carried out by the organization and under its direct control.

At the moment of its founding, ten states were ESRO members: Belgium, Great Britain, the Netherlands, Denmark, Spain, Italy, France, West Germany, Switzerland and Sweden. Austria, Ireland, and later on Canada, also participated in its work as observers. Other nations could join ESRO only with the agreement of all its members.

ESRO set up an entire network of scientific and technical institutions located in the various European countries. The most important of them are: the Center for Space Science and Technology in the Netherlands, the Control and Space Data Processing Center in West Germany, the Space Research Institute in Italy, the Research Rocket Launching Range in Sweden, and the system of satellite tracking stations which include four stations built in Belgium, Alaska, Spitsbergen and in the Falkland Islands.

The largest of these institutions, the European Center for Space Science and Technology, carries out the designing, development, assembly and testing of the satellites and instrument compartments of research missiles, and also conducts joint research and development. Among the six co-workers of the center are citizens of five European nations.⁵

The mentioned ESRO institutions were located in the various Western European nations in accord with a special resolution approved at a conference of delegates convened in 1962 for signing the constituent documents of ESRO.⁶ The legal status of these institutions is defined by agreements concluded between ESRO and the member states. The agreements regulate the status of the corresponding institution and its personnel on the territory of the member state, including the questions of privileges and immunities, liability, the law to be applied, the procedure for resolving disputes, and so forth.

ESRO has signed these agreements as a principal in international law.⁷ However, the activities of the organization on the territory of the member states in a number of questions are subordinate to national law.⁸ Disputes related to the application or interpretation of the agreements are examined by international arbitration, the decisions of which are of binding force.

The superior directing body of ESRO responsible for carrying out its scientific, administrative and financial activities is its council where each member state has one vote. The council sessions are held at least twice a year, as a rule, at the headquarters of the organization in Paris. The

council elects from among its members a bureau consisting of a chairman and two vice chairmen for a term of one year with the right of reelection for not more than two terms.

According to the constituent convention, the competence of the council includes: determining the policy of the organization on scientific-technical and administrative questions; approving the programs and annual work plans; determining the level of financing for the subsequent 3-year period at the end of every 3 years, and the approval of the annual budget; the admitting of new members, as well as the taking of other decisions related to the activities of the organization (Article X, Point 14).

Decisions of the council involving admission of new members to the organization can only be taken unanimously. Decisions on financial and certain other questions also require unanimity or a special majority.

The council by a majority of two-thirds of the votes appoints the director general who carries out the superior executive functions and is the legal representative of the organization. He also directs the work of all the ESRO institutions (Article XI).

The total number of ESRO employees has exceeded 1,000 persons, including around 200 persons working at the organization's secretariat in Paris.

The financial activities of the organization are regulated by the constituent convention (Article XII), as well as by two special protocols approved simultaneously with this convention. In 1964-1972, ESRO expenditures were not to exceed 306 million units of account (in 1962, this total was 306 million dollars). For comparison we might point out that the NASA budget in 1966 exceeded the annual ESRO budget by 140 times.

It was assumed that the money to be allocated to ESRO for the first 8 years of its activities would make it possible during this time to develop 10-12 satellites and 300 research rockets. Actually by the end of the designated time, ESRO had launched 7 satellites and 171 rockets (125 rocket launches were successful).⁹

The amounts of the contributions by the member nations were to be set on the basis of national income under the stipulation that none of the ESRO members would be required to pay over 25 percent of the total amount of the payments (Article XII of the Convention). Around 70 percent of the contributions come from Great Britain, France and West Germany.

Since the end of 1966, ESRO has begun to experience financial difficulties. Even then it was clear that it would be impossible to carry out fully the launches planned over the 8-year period of research rockets and "small" satellites at the designated times and within the limits of the allocated funds.

A number of nations, particularly England, openly voiced dissatisfaction with the uneven allocation of industrial orders between the individual countries. Spain announced its withdrawal from the organization as of 1 January 1968, "for economic, technical and financial reasons," and revised this decision only after its contribution was reduced by 90 percent.¹⁰ In the second 3-year period of its existence (1967-1969), ESRO started without a clearly defined program and a set budget. The situation was further complicated after the delay and unsuccessful launch of the first ESRO satellite in 1967. As an "extraordinary measure" for the purposes of keeping the organization alive, the 1967-1968 budgets were set by the council on a temporary basis and in violation of the rules set out by the constituent documents.

In November 1968, a conference of Western European ministers in Bonn succeeded in achieving compromise solutions on a number of the disputed questions related to "space Europe" including on the question of a limit of expenses for ESRO in 1969-1971. At the same time, this conference for the first time decided that in the future ESRO would halt its existence as an independent organization and become part of the unified European Space Organization which would bring together all the intergovernmental space organizations existing in Europe.

From 1964 through 1968, although there still was not a single orbited satellite among the assets of ESRO, its basic activities involved the launching of research rockets, and this was carried out from the ESRO launching grounds in Sweden as well as from a number of national missile grounds.

The first ESRO satellite, Iris, designed for studying solar radiation and cosmic rays was launched on 17 May 1968 with a delay of one year against the planned date. The launch was made from U.S. territory using an American carrier missile. The delay in manufacturing certain scientific instruments and systems for the second Aurora satellite also led to a deferral of the launch for almost a year. Both satellites were developed with the direct participation and technical advice from NASA. NASA provided their launching gratis, but in return the United States gained the right for unobstructed access to all scientific information from these satellites.

By the beginning of 1977, ESRO developed another six scientific satellites. They were all launched using American carriers from American territory. However these launches were now made on a commercial basis. For each of them the United States received several million dollars from Western Europe.

The great significance which began to be given to applications satellites, and above all the communications and meteorological satellites, caused increased interest in them by ESRO, although according to the constituent convention, it could only be concerned with scientific satellites. From 1967, upon the request of the European Communications Satellite conference, ESRO began to develop a program for creating a European communications

satellite. Together with NASA, the design of a satellite was discussed for providing air traffic control. In the middle of 1971, France proposed to ESRO the further joint development of its weather satellite.

A number of important decisions on the ESRO program was taken by the council of this organization in December 1971.¹¹ The main one concerned the programs for developing applications satellites, in particular Aerosat (aircraft service satellites) and Meteosat (meteorological satellites) and European communications satellites. In 1972-1974, it was decided to spend around 300 million dollars on these programs to be carried out by ESRO. The organization was given the right to plan the expenditure of funds for these satellites in the subsequent years, up to 1980, within the established limit.

The ESRO Council also decided to continue the program for creating European scientific satellites, however having significantly cut back on allocations for these purposes.¹² At the same time for the sake of saving funds, it was decided to eliminate the ESRO testing range in Kiruna, by turning it over to Sweden; the Space Research Institute in Italy was also eliminated (it was turned into the International Center for Space Documentation and Information).

The broadening of the applied sphere of ESRO activities required a revision of its constituent convention. The amendments to the convention prepared by a work group specially convened for these purposes, provided for the participation of the ESA members in the development plans for applications satellite systems of interest to them. For this purpose special protocols were to be concluded by the concerned ESRO members for each such project or program.

Although the mentioned amendments to the convention approved at the end of 1972 by the Council have not formally come into force, they have served as the legal basis for the further activities of ESRO, particularly in the sphere of the use of space for applied purposes. As will be shown below, the new stage starting in 1973 in the history of ESRO was related to the system of decisions involving "space Europe" as a whole.

From the analysis made of the legal status of ESRO, it follows that it was set up as an intergovernmental organization directly concerned with the creation and operation of certain types of space equipment. In this sense, ESRO, like certain other operational space organizations, has differed from the traditional interstate organizations which involve not joint production activities but rather the coordinating of actions of their members in one or another sphere.¹³

Within the limits set by the constituent convention, ESRO entered into international intercourse as a principal of international law. In this quality, in particular, it established ties and concluded international treaties with states and other international organizations. In a number of instances, ESRO, as a legal entity, also entered into civil law relationships regulated by national law. In accord with the special protocol,¹⁴

the member states of ESRO granted the organization and its personnel privileges and immunities analogous to those which usually are granted to inter-governmental organizations.¹⁵

In parallel with the creation of ESRO and somewhat before, active diplomatic talks were carried out over the question of establishing an European "rocket pool" for the purpose of producing carrier rockets.

As in the first instance, England showed the greatest activity in the talks, and it was interested in using the English Blue Streak missile as an European rocket. Such a decision made it possible for the English government to some degree to recover the scores of millions of pounds spent on the development of the Blue Streak, and to involve the financial and scientific-technical resources of the other countries in improving its missile. However this decision was not to the liking of the two other main participants in the talks, France and West Germany, which also wanted to take a direct part in producing the European launch vehicles. Only after England had made concessions and had agreed to French and West German participation in the development of the second and third stages of the missile, was it possible to come to terms on setting up a new organization. The other Western European nations joined the "pool" out of prestige considerations and a desire to secure a certain share of the missile business for their industrial firms.

The Convention on the Establishment of the European Launcher Development Organization (ELDO) was signed in London on 29 March 1962 and came into force on 29 February 1964.¹⁶

The members of the organization included seven states: Australia, England, Belgium, the Netherlands, Italy, France and West Germany. Denmark and Switzerland participated in its work as observers.

The basic mission of ELDO was to provide Western Europe with its own carrier missiles for launching satellites for scientific and commercial purposes. It was assumed that ESRO would be one of the main consumers of the missiles produced by ELDO.

The organization was directed by a council on which each state had one vote. The council established financial and scientific-technical committees. The international ELDO secretariat located in Paris and numbering over 300 employees was headed by a secretary general. We will not take up the structure and legal status of this organization in more detail since at present these questions are chiefly of historical interest. However, without at least a brief review of ELDO activities it would be difficult to describe the entire complex of acute political and legal contradictions in the space research area between the Western European countries as well as between them and the United States.

The initial ELDO program the completion of which was planned for the end of 1966 envisaged the creation of three-stage carrier missiles capable of putting a satellite weighing up to one ton into a low circular orbit. The duties of carrying out this program were allocated among the members of the organization in the following manner. England was to provide its Blue Streak missile and this was to be used as the first stage of the European missile. France was concerned with the development of the second stage, and West Germany with the third. Italy was entrusted with developing an experimental satellite, the Netherlands was concerned with the telemetric system, and Belgium was in charge of the ground control station. Australia was involved in the work of the organization for the purpose of using its Woomera Missile Range for the testing and launching of the carrier missiles.

In contrast to ESRO, ELDO did not have the powers to assign contracts in the aerospace industry or to be involved itself in the production process. Its functions basically came down to the overall supervision and control over the course of work in developing the launch vehicles.

A limit of 210 million units of account was set for carrying out the initial program,¹⁷ and here around 40 percent of the expenditures were to be paid by England, while France and West Germany each would cover approximately 20 percent.

From the very outset the work of developing an European launch vehicles was carried out without coordination, in violation of the set dates, and in a situation of unceasing arguments over the share of expenditures for the ELDO members. Every 2 years, in 1966, 1968 and 1970, the organization underwent an acute financial crisis. The work of the organization was halted repeatedly. Only the firm intention of France and West Germany to keep the European program for developing the launch vehicles alive at any price saved ELDO from complete collapse. The special interest of France and West Germany in keeping ELDO alive was explained, in addition to political considerations, by a desire to provide an European carrier for the Symphonia communications satellite which was being developed by these two nations. The United States, in viewing Symphonia as a competitor for the commercial communications satellites of the Intelsat system, refused to guarantee the launching of this satellite with its carriers. Moreover, France was interested in using its missile range in Guiana for launching the European missiles, as it had spent significant amounts on its construction.

Soon after starting work on the Europa-1 missile it became clear that at least double the amount of money would be needed to complete it than had initially been assumed.

A conference of ministers from the ELDO member states meeting in 1966 decided to revise the initial program of the organization. In addition to completing the work of developing Europa-1, a decision was taken to institute a so-called supplementary program for the purpose of producing a more powerful Europa-2 carrier. The plan was that the launching of

Europa-2 from a new missile range in French Guiana would make it possible to utilize this carrier for launching European communications satellites. This would provide a market for the ELDO missiles and ensure Western European independence from the United States in the development of the applied space systems.¹⁸

For carrying out the initial and supplementary programs, the ministerial conference established a limit of 626 million units of account, but just a year after the approval of these decisions, it was clear that it would take another 101 million to carry out both programs up to the end of 1971. A new financial crisis developed and this was exacerbated by England's announcement (in April 1968) that it was immediately withdrawing from the organization.

Only under the strong pressure of its partners who linked the question of English membership in ELDO with its admission to the Common Market did England agree to continue its financial participation in the organization up to 1971. At the same time, ELDO more and more lost confidence in the eyes of the other members of this organization. For example, Italy, deprived of a number of orders, also announced that it would cease to support the ELDO program after 1971.

Difficult times arose for ELDO in the autumn of 1970, when a profound crisis again shook all "space Europe." However the fate of the European space organizations at that time was determined on a different level, within the permanent space conference with a membership of the ministers from the Western European nations.

As for the course of work on the Europa-1 and Europa-2 missiles, the first of these carriers has not yet succeeded in orbiting a single satellite, regardless of the successful inflight and design testing, while work on the Europa-2 missile was halted after a series of failures during trials. By this time over 640 million dollars had been spent on the development of the missile. Nor has there been any development of the most recent plans of certain ELDO members which provide for the development of an even more powerful Europa-3 carrier by the end of the 1970's.

On 27 April 1973, a fatal blow was dealt to ELDO, when at a session of the council the representatives of France and West Germany announced the decision of their governments to halt the financing of the program to develop the Europa-2 missile. Since this time ELDO has begun to curtail its activities and in fact has ceased to exist.

The third association of Western European nations in the area of space development, the European Communications Satellite Conference (CECS), is not an organization in the strict sense of the word, although it has often been termed such.

The conference was convened for the first time in May 1963 for working out a coordinated position among the Western European countries on an American proposal to set up a worldwide communications satellite system. The coordination of the viewpoints of the Western European nations on the question of using satellites for commercial communications purposes became its main task. CETE did not have a permanent budget or scientific research institutes, and was not engaged in the direct development of space technology.

Participating in the work of the conference, the sessions of which convened periodically in different countries, were 16 states. The auxiliary bodies of the conference were the Committee on Organizational Questions, the Committee on Space Technology, the Technical Planning Group and the Secretariat. The CETE carried out its activities in close contact with the other European space organizations as well as the European Radio Broadcasting Union and Eurvision.

In the eve and during the course of the talks to work out the so-called final agreements on the international communications satellites consortium (Intelsat) which were started in Washington in 1969, the Western European governments used the CETE as a forum for coordinating a uniform European position at the talks with the Americans. This was a sort of attempt to undertake collective actions to defend the political and economic interests of the Western European nations when confronted by the American dominance in the area of space communications.

The second goal which the CETE set for itself was to elaborate a European program for developing a regional communications system using satellites. Upon the request of the CETE, ESRO was concerned with the direct elaboration of the plans for an European communications satellite.

In July 1972 the European Space Conference approved a decision to halt the activities of the CETE. There was no longer any necessity for its existence since the talks to work out the Intelsat agreements had come to an end and the development of European communications satellites had been entrusted to ESRO.

Before 1966, work among the Western European space organizations was virtually uncoordinated, and no uniform policy was carried out in the area of space research and development. Difficulties in carrying out the designated programs, differences of opinion between the Western European nations on the question of placing orders with industry, and the significant cost overruns--all of this required the regulating and coordinating of activities by the existing space organizations.

Upon the initiative of the Italian government, the question of the coordination of the European policy in the space area was incorporated in the agenda of the ministerial conference of the EEC members in 1966. This marked the beginning to the setting up of a new permanent international body, the European Space Conference.¹⁹

Participating in the first European Space Conference in December 1966 were the seven EEC nations as well as Denmark, Spain and a number of other nations as observers. The conference resolved to make an analysis and evaluation of the existing national and international space programs as a first step on the way to working out a unified European policy in this area.

The second conference was held in Rome in the summer of 1967. Virtually all the states which were members of the European Space Organizations participated in its work. At Rome a resolution was approved in which the European Space Conference was made a permanent body which would hold its sessions annually on a ministerial level for the purpose of working out a coordinated European space policy and observing its implementation. The proposals to formulate such a policy were to come from a specially established consultative programs committee. In justifying its conclusions on the necessity of an extensive space research program for Europe, the committee mentioned first of all considerations of a political nature: "Europe should first of all demonstrate its determination to be independent."²⁰

The third European Space Conference held in November 1968 in West Germany approved compromise decisions which involved the current activities of the European space organizations and the more distant prospects.²¹ At the conference a decision was taken to merge the existing space organizations into a single European organization. A draft convention for the setting up of such an organization was to be ready by 1 November 1969. The conference approved the ESRO budget for 1969-1971, and empowered the ESRO Council to assume obligations for the individual projects the completion dates of which were set for the period after 1971. As the long-range goals, a European communications satellite and large scientific research satellites were to be developed as their programs went beyond the economic and technical capabilities of the individual countries.

Due to the fact that various viewpoints arose among the Western European nations on the advisability of further development of European launch vehicles, the future program was to be given a more profound character making it possible for the nations, in the event they so desired, to participate not in all the projects but only in some of them.

The carrying out of the decisions approved at the conference in West Germany immediately encountered difficulties, since England and Italy refused to participate in the additional expenditures related to implementing the ELDO programs approved by the ministerial conference. ELDO was again in trouble, and along with it the entire system of decisions relating to the future European space program.

A new element in the already tense situation was introduced by the U.S. proposal to the Western European nations to participate in the long-range NASA programs to develop orbital stations and reusable space transports.

Under these conditions, in July 1970, a fourth European Space Conference was held in Brussels. At that time Italy was in the midst of a governmental crisis, and a new Conservative government had recently come to power in England. Already because of these circumstances it was clear that the decisions of the conference would have only a provisional nature. But the questions which were to be discussed by the ministers of the Western European nations involved the long-range future, namely: the European space program up to 1980, the merging of the existing space organizations and the participation of Europe in a future U.S. space program.

A majority at the conference approved a resolution to set up an European communications satellite system in 1978-1980 on the basis of the communications geostationary satellite to be developed in Europe. A decision was taken together with NASA to continue work on developing the Aerosat system and to begin research on European meteorological satellites. The conference considered it advisable at the beginning of 1971 to open for signature a convention to found an unified European space organization.

At the Brussels Conference there was a clear split between England and the small countries, on the one hand, and France, West Germany and Belgium, on the other. A situation had developed whereby the basic burden for carrying out the development program for the European carrier missiles had been assumed by the latter three countries, moreover without having any certainty that Europe would use these carriers.

The situation was complicated even at the first session of the Brussels Conference. During the second session in November 1970, also held in Brussels, the explosion occurred. The conference was unable to pass an acceptable decision on any of the questions discussed (applications and scientific research satellites, launch vehicles and a unified European space organization).

The culminating point of these events was the statement of France, West Germany and Belgium that since only these nations held a consistent position on the questions of the European space program, they had decided to follow their own path, if need be, outside the framework of the existing European space organizations, and invited other nations to join them. The core of the program supported by the three nations was the Europa-3 carrier missile and the communications satellite.

The new period of crisis starting with the 1970 Brussels Conference was the most extended and threatening for "space Europe." For 2 years it was impossible to convene the next session of the European Space Conference.

In speaking at the International Astronautical Congress in Vienna in October 1972, the ELDO legal affairs adviser, M. Bourély, stated: "The present situation is characterized by complete uncertainty not only for the date of the next European ministerial meeting for space affairs, but even the very possibility of organizing such a meeting, and, even worse, the results that might be expected from it."²²

The situation was further complicated by the split in the French and West German positions as these nations had previously shown the greatest consistency on the question of developing the European launch vehicles.²³

At an unofficial meeting of the scientific and technical ministers of certain Western European nations held in November 1972 and aimed at reconciling the viewpoints in the course of preparing for a session of the European Space Conference, France was the only nation which categorically insisted on developing the Western European Europa-3 launch vehicle. West Germany, in agreeing to make a certain financial contribution to this carrier, stated that it did not consider the development of the missile essential and intended to participate in the future American space program.

On this occasion the French Minister of National Defense Michel Debré stated in an interview with the newspaper FIGARO that France would be forced to carry out an independent space program, since a joint space program among the Western European nations had reached a blind alley. "Our partners are willing to be satisfied with the role of American subcontractors," said Debré.²⁴

A month after this statement, in December 1972, a session of the European Space Conference was held in Brussels. As a result of complicated diplomatic maneuvers, the ministers of the Western European nations succeeded in reaching a compromise at this session.

The next session of the European Space Conference met in Brussels in July 1973. At it it was decided that the unified organization of the Western European nations for the research and use of space which was named the European Space Agency should begin operating on 1 April 1974.²⁵ Upon the initiative of West Germany which had assumed over one-half of the required expenses, a decision was taken to participate in developing the orbital laboratory (Spacelab) for the American reusable transport spacecraft. Approval was given to a program for developing a new European launch vehicle, the Arian, with France carrying the basic share of expenditures,²⁶ as well as a program for developing the Marots satellite for setting maritime navigation, and here England showed particular interest in its development.

The decision taken as well as the projects which were already in the stage of implementation determined the basic elements in the program of the European Space Agency activities for 1974-1980. This program included the development of Spacelab,²⁷ the Arian launch vehicle, and the satellites which were to be used for developing applications space systems (OTS for communications, Meteosat for meteorological, and Aerosat and Marots for navigational satellites), as well as a series of scientific satellites.

A number of bodies in the European Space Conference was involved in preparing the draft convention for organizing the European Space Agency.²⁸ Although this draft was to be worked out by 1 October 1969, the preparation

of the Agreement was delayed due to the absence of a unified policy among the Western European nations over the support for the joint space programs.

The 1962 EEC Convention was used as the basis for working out the new constituent document, incorporating the changes approved by the ESRO Council in November 1973 but which had not yet gone into force due to the decision to set up the Agency. These changes, as was mentioned above, concerned primarily the powers of ESRO regarding the programs for developing the applications satellites. ESRO was also entrusted with coordinating all the civilian space programs carried out by the Western European countries.²⁹

The convention to establish the European Space Agency was approved at the session of the European Space Conference held in Brussels on 15 April 1975, and was opened for signing in Paris on 30 May 1975 at a delegates conference. The convention was signed by 11 states, 10 of which were ESRO members: Belgium, Great Britain, the Netherlands, Denmark, Ireland, Spain, Italy, France, West Germany, Switzerland and Sweden.

The new convention which consisted of 27 articles and 5 appendices³⁰ gave the European Space Agency broad powers going far beyond the limits of those which previously had been granted to the European space organizations. For the first time the Agency was given the task of internationalizing the space programs of the member states, as well as coordinating their national space policy (Article II). The methods and ways of this internationalization and coordination as established by a special appendix to the convention (Appendix IV) in particular imposed definite restrictions on the right of the Agency member states to carry out bilateral and multilateral space projects with states which were not members of the Agency. Such projects should not run contrary to the scientific, economic and industrial aims of the Agency, and wherever possible the other Agency members should be informed of these projects and invited to participate in them. The mentioned restrictions could have negative consequences for the development of extensive international collaboration on a bilateral and multilateral basis, and they deprive the Western European states of independence in taking decisions on collaboration with other countries. As for the internationalization of the programs carried out by the Agency member states, the convention established the principle in accord with which each Agency member is bound to provide an opportunity for all the other members to participate in all the new civilian space projects planned by it.

A particular feature of the Agency is also that the space programs are divided into compulsory which all the member nations should join, and elective where the member states may participate at their discretion. A corresponding division has been made in the financial obligations and in the procedure for implementing these programs.

The compulsory program planned by all the Agency members includes the development of scientific satellites as well as the so-called "base

activities" (technological research, the study of future plans, the documentation and information service, and others). The elective program which is financed only by the concerned Agency members includes the development of the applications satellites and satellite systems, as well as the carrier missiles and space transport systems (Article V).

A new element in the organization of Western European space collaboration is the provision of the convention that the Agency can directly participate in creating operational (commercial) satellite systems. In accord with the decisions approved by a majority of the council members, the Agency has the right to turn over technology to operational organizations, to use these organizations for the launching of applications operational satellites and control their flight, as well as participate in other activities upon the requests of the mentioned organizations (Article V, Point 3).

The convention was opened for signing for only the member states of the European Space Conference. Membership in it is possible only with the agreement of all the members of the convention (Articles XXI and XXIII).

In practical terms this means that the Agency has been set up as a closed organization of Western European nations.

The basic leading bodies of the Agency are: the council consisting of representatives from all the member states and a director general. The organizational structure to a significant degree is analogous to ESRO.

Each state has one vote on the council. The council's functions include the approval of the work programs and plans of the Agency, the approval of the annual budget and determining the expenditure level for a 5-year period (the last item requires a unanimous decision).

The Agency has maintained the financing principle which existed in ESRO, in accord with which the contributions of the nations are set depending upon their national income.³¹

In considering that the council can be formed on the ministerial level (Article XI, Paragraph 4), the coming into force of the convention will mean the end of not only ESRO and ELDO but also the European Space Conference.³² In this manner the Agency legally and actually will be turned into the single intergovernmental space organization for Western Europe.

For directing the implementation of each elective Agency program, a program board is to be established with representatives from all the nations participating in this program.

The director general who is elected by the council is given executive and representative functions (Article VIII).

for settling disputed questions between the Agency members, an arbitration body is provided for, and its decisions are binding and final for the disputing parties (Article XVIII).

The convention grants the Agency the right, in the event of the approval of unanimous decisions by the council, to conclude agreements on cooperation with other international organizations, as well as with governments and national organizations of countries which are not members of the Agency (Article IV). Such agreements can involve, in particular, the participation of other states in international organizations in the Agency programs. Article XV reflects the now widely recognized right of interstate organizations to conclude international legal treaties.³¹

In accord with Point 1 of Article XIII, the convention is to come into force after it has been ratified by the 10 nations which were members of ESRO. The process of ratifying the convention, it is assumed, will last from 2 to 3 years. In this regard legal questions have arisen related to the agency's activities during the period from the moment of the signing of the convention until it comes into force.³²

Although the resolution approved in July 1973 by the European Space Conference stipulates that the Agency is to be set up by the "merging" of ESRO and ELDO, the latter of the mentioned organizations has in fact been eliminated and, in the description of M. Bourély, since 1973 "has represented only a legal and political fiction."³³ The new program for developing the European Arian carrier began to be carried out not under ELDO, but rather as a special ESRO project even before the Agency was set up.

Considering that the convention on the establishing of the Agency to a significant degree was worked out on the basis of the ESRO convention and also that the current European programs were being carried out by this organization, the functions of the Agency during the transitional period were to be entrusted to ESRO. Here from the moment of the signing of the Agency convention, ESRO was to carry out its activities under the name of the "European Space Agency," in applying the provisions of the new convention wherever feasible. The representatives of the states on the ESRO and ELDO councils would hold their sessions jointly until the new Agency Council was formed. Thus, *de facto* the European Space Agency began its existence on 11 May 1975.

Of definite interest are the questions of succession related to the transfer of the claims and debts of ESRO and ELDO to the new European organization.

Article IX of the convention stipulates that as of the date it comes into effect, the entire aggregate of rights and obligations of ESRO and ELDO is to be assumed by the Agency. As of this same date, according to Point 2 of Article XIII, ESRO and ELDO *de jure* are to cease their existence. In this manner the Western European states have formally decided

not to resort to the legal procedure of dissolving the organizations as provided for in the corresponding articles of their constituent enactments. The solution to the question was facilitated by the fact that all the ESRO and ELDO members, with the exception of Australia, announced their intention to join the new Agency. Australia denounced the ELDO convention on 1 January 1973.³⁶

The most complicated questions of succession arose over the actual elimination of ELDO. A large portion of the personnel from this organization was dismissed, the property was sold or was to be used by ESRO, remaining formally the property of ELDO, until it ceased its legal existence. The final list of rights and duties which should be transferred from ELDO to the Agency would be drawn up by the director general of the Agency.³⁷

The creation of the European Space Agency has marked a new stage in the "space integration" of the European capitalist nations. On the political level the integration processes in the space area have been proclaimed in the press of these countries as the "instrument for building Europe," and as a firm intention to turn Western Europe into the third "space power."³⁸

At the same time, even the Director General of the European Space Agency, R. Lilien, has not concealed the fact that the most difficult task consists not in solving technical problems stemming from the new space program, but rather to meet the "political challenge" caused by the "authentic integration of European space efforts."³⁹ In other words, it is a question of achieving the complete elimination of the independent national space programs of the Western European nations under the flag of integration.

Only the future will show how lasting the achieved compromise solutions will be. However, it is indisputable that these decisions are unable to "eliminate" the antagonistic contradictions inherent to all manifestations of imperialist integration.

FOOTNOTES

1. For the industrial associations and consortiums in Western Europe in the space field, see: O. Giarini, "L'Europe et l'Espace," Lausanne, 1968, pp 221-226; "Europe in Space," (A Survey Prepared by ESRO), Paris, 1974, pp 127-129, etc.
2. G. G. Gerasimov, "Mezhdunarodnyye Organizatsii i Uchrezhdeniya" [International Organizations and Institutions], Moscow, Progress, 1972, p. 602.
3. For the economic and political contradictions of imperialist integration, see: I. S. Shaban, "Imperialisticheskaya Sushchnost' Evropeyskoy Integratsii" [The Imperialist Essence of Western European Integration], Moscow, Nauka, 1971; A. M. Alekseyev, A. I.

Vikent'yev and B. P. Miroshnichenko, "Sotsialisticheskaya Integratsiya i Ee Preimushchestva Pered Kapitalisticheskoy" [Socialist Integration and Its Advantages Over Capitalist], Moscow, Nauka, 1975, pp 16-114.

4. For the text of the convention, see: "Basic Texts, Rules and Regulations, Agreements," Doc. ESRO Sp-4, March 1969, p 15.
5. BULLETIN DU CERC/CECLIS, No 6, 1969, pp 9-14.
6. Doc. ESRO Sp-4, p 44. In the course of the reorganizations of ESRO, the membership and name of the institutions were repeatedly changed.
7. The agreements were signed by the ESRO director general after approval by the council.
8. See, for example: "Agreement Concerning the European Space Operations Center," Doc. ESRO Sp-4, pp 280-285.
9. "Livre Blanc du president de la CSE sur l'Europe Spatiale," AIR ET ESPACE, No 433, 1972, pp 15, 63.
10. Doc. ESRO, Rapport Général, 1968, p 22.
11. H. Faltenecker, "The Reform of ESRO (Its New Legal Concept and Committee Structure)," ESRO/ELDO BULLETIN, No 20, 1973, pp 8-10.
12. Up to 1980 the organization planned to launch five scientific satellites designed primarily for astronomical and magnetospheric research (one of them jointly with England and the United States) ("Europe in Space" (A Survey Prepared by ESRO), p 18).
13. In speaking on the successor of ESRO, the European Space Agency, the director general of this agency, R. Gibson, noted: "An organization similar to ours has more in common with a large industrial firm than with a majority of the other international organizations" (ESA BULLETIN, No 1, 1975, p 3).
14. Doc. ESRO Sp-4, pp 32-35.
15. The legal status of ESRO and certain other space organizations has a number of common features with the international atomic organizations. For the legal status of the latter, see: S. A. Malinin, "The Legal Nature of Atomic Interstate Organizations," INTERNATIONAL JOURNAL OF SPACE AND AERONAUTICS, No 9, 1970, pp 66-74.
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21. "Resolutions de la Conference Spatiale Européenne," Bad Godesberg, November 1968.
22. M. Bourély, "La crise spatiale européenne," "Proc. XV Colloq. Law Outer Space," Davis, 1973, p 182.
23. Characteristic of the mood prevailing in Western Europe at that time were the titles of articles appearing in the French press: "A Difficult Summer for the European Space Conference," "Space Europe--Will it Survive?" and others (AIR ET COSMOS, No 442, 1972, p 17; No 453, 1973, p 37).
24. FIGARO, 15 November 1972.
25. For the contradictions among the Western European partners which led to new delays in setting up the Agency, see: AIR ET COSMOS, No 539, 1974, p 35.
26. The Arian missile is to be built by a French-controlled industrial consortium.
27. For more detail on the Spacelab agreements, see Chapter 5 (Part I).
28. H. Valdemarsson, "La nouvelle agence spatiale européenne," ESRO/ELDO BULLETIN, No 24, 1974, p 16.
29. "Europe in Space (A Survey Prepared by ESRO)," p 15.
30. For the text of the convention, see the book: N. M. Matte, "Droit aérospatial," A. Pedone, Paris, 1976, pp 255-285.
31. The Agency budget was, respectively, 374 million dollars in 1975, 491 million in 1976, and 557 million in 1977.
32. The first session of the council on the ministerial level was held in February 1977.

33. For this see: M. Bourély, "The European Space Agency's Contribution to the Development of Space Law," "Proc. XIX Colloq. Law Outer Space," California, 1977, pp 21-31.
34. M. Bourély, "Problèmes juridiques posés par la signature de la convention créant l'Agence spatiale européenne," "Proc. XVII Colloq. Law Outer Space," California, 1975, pp 100-106.
35. Ibid.
36. Austria, Norway and Canada participate in the work of the Agency as observers.
37. Simultaneously he performs the duties of the director general of ESRO and the secretary general of ELDO.
38. "Europe in Space (A Survey Prepared by ESRO)," p 12.
39. ESA NEWSLETTER, No 1, 1975, p 3.

CHAPTER 5: INTERNATIONAL SPACE PROGRAMS OF THE UNITED STATES (POLITICAL AND LEGAL ASPECTS)

The scale of the U.S. international space programs and the constant attention given them by the president, the Congress and State Department show the great foreign policy significance which is given to these programs in the United States.¹ The heightened interest among American officialdom in space has been a direct consequence of the amazement which American society evidenced after the launching of the first Soviet earth satellite.²

For the sake of achieving "national leadership in space" and restoring the shaken American international prestige in the area of advanced science and technology, American capitalism has mobilized all its possible resources. NASA which was set up in 1958 was given enormous funds and broad powers.

The annual budget of this organization has risen from 300 million dollars in 1959 up to 6 billion dollars in 1966 in the course of carrying out the most expensive Apollo program. During the period of the flourishing of its activities in the middle of the 1960's, NASA brought together 17 major scientific research centers with a staff of 33,000 employees. Around 20,000 industrial firms were working on NASA orders. The total number of workers, engineers and technicians employed in American space industry reached up to 400,000 persons.

The greatest benefits during this artificially inflated boom were reaped by the major U.S. aerospace corporations such as North American Rockwell, Boeing, Lockheed Aircraft, McDonnell Douglas, and others. In playing the role of the main NASA contractors, they secured billions in orders guaranteed by the state and bringing high profits. Naturally these corporations viewed the questions of international space cooperation primarily as an opportunity to gain new profits by broadening the market for their products or obtaining new state contracts.

NASA was formed under the National Aeronautics and Space Act of 29 July 1958.³ This law stated the U.S. principles in space, it created a system of state leadership over space activities and established the legal bases for the international NASA programs.

The 1958 law officially stated as the task of NASA the achieving of U.S. "leadership" in space activities (Article 102, C, 5). The same aim was set in the statement made when President Eisenhower signed the law. In this regard, a different evaluation must be given to the so-called dualism of the 1958 law (international competition and cooperation), about which American authors have written.⁴ In granting NASA the rights to carry out international programs, the Congressmen were concerned that international cooperation be used for carrying out the political and economic tasks confronting the United States.

Thus, in discussing the draft law on the Committee on Aeronautical and Space Sciences, Senator Saltonstall, in giving the reasons for incorporating a special article on cooperation in the law stated: "Should we solve this space problem by ourselves? Certainly it would be better if we worked out international measures which would make it possible to employ the minds of many nations as well as ours."⁵ The subsequent practices in carrying out the international NASA programs have firmed the validity of the conclusion that a majority of these programs were dictated by the interests of the U.S. aerospace industry or by a desire to employ the scientific and technical potential of other nations for American purposes.

In developing the general declarative provision on U.S. cooperation with other nations or groups of nations, as was found in the first version of the draft law, in its discussion within Congress Article 205 was incorporated and this gave NASA the right to participate in international cooperative programs in accord with agreements concluded by the president "with the advice and consent of the Senate."

Thus, on the basis of U.S. domestic legislation, international agreements on cooperation in the research and use of space can be concluded only by the president with the subsequent ratification of Congress. NASA, according to Article 205, acts as the organization entrusted with carrying out the programs provided by these agreements.

However, even in signing the 1958 law, President Eisenhower gave it an interpretation making it possible to conclude less formal agreements on space cooperation. In a statement made at the signing, Eisenhower pointed out that he viewed Article 205 "only as recognition of the fact that in this area international treaties may be concluded, and not as a prohibiting of the inclusion of less formal cooperative arrangements in the appropriate instances."⁶ This interpretation opened up the possibility of signing (for the NASA international programs) so-called "executive" as well as "agency-to-agency" agreements.⁷

Among the agreements relating to the NASA international programs as yet there have been virtually none which have been concluded with the observing of the entire procedure stipulated by Article 205 of the 1958 law. The agreement between the USSR and United States of 24 May 1972 is an example of an agreement signed by the president but without subsequent congressional ratification.

A predominant majority of the agreements under which NASA carries out its international activities has been concluded in the form of executive or agency-to-agency agreements. In a number of instances these are signed directly by NASA. At times the agency-to-agency agreements are concluded to carry out already existing executive agreements or with subsequent approval on a governmental level.⁸

The decision to use one or another type of agreement is taken in each specific instance depending upon the significance, nature and duration of the obligations, and by consultation with the State Department under which a special subdivision has been formed concerned with space problems. The State Department takes an active part in all stages of the talks concerned with concluding these agreements.

In concluding international agreements in the area of space research, the State Department and NASA have made a number of requisite conditions which include the demand that each side participating in the agreement pay for the expenses related to carrying out its portion of the joint project, and also that the project be of mutual interest and scientific value, in aiding the fulfillment of the U.S. national space program. Preference is given to agreements on specific scientific projects and not general-purpose programs.

As a result, NASA has concluded over 250 international agreements and understandings of different types with more than 30 states. To one degree or another, scientists and scientific organizations from more than 70 nations have participated in the various NASA international programs.⁹

Many of the agreements signed by NASA involve the locating of stations for receiving information and controlling the flight of American spacecraft and satellites on foreign territories. A series of agreements provides for the launching of foreign satellites using American carrier missiles, the placing of scientific equipment of other nations on American space devices, and the conducting of joint experiments using research rockets. Another group of agreements dealt with work of an applied nature involving communications, meteorology and earth resource satellites. Finally, in recent years agreements have appeared related to manned space flights (the Apollo-Aurora Project and the Spacelab Project).

The overall results of the NASA international space programs can be characterized by the following figures: More than 20 foreign satellites launched by American launch vehicles; over 30 foreign instruments located on American space devices; hundreds of joint launches of meteorological and geophysical rockets made from the territory of 14 states; and a series of international programs in applied areas of space use.¹⁰

However, behind these figures one must not overlook the fact that many American space programs are aimed at securing one-sided political, economic and scientific-technical benefits and advantages.

In defending the interests of the space rocketry industry, the U.S. is endeavoring to provide it with markets in other nations, to make the space programs of these countries dependent upon the United States, and to prevent competition by foreign countries in the area of the practical use of space.

The U.S. legislation contains principles in accord with which the commercial application of space has been put into the hands of private capital. The second U.S. national law in the area of space, the Communications Satellite Act of 31 August 1962,¹¹ gave the right of planning, creating, owning and operating the commercial communications satellite system (independently or jointly with other states) to the private American Comsat Corporation. The approval of this law and the subsequent development of events have shown that U.S. international policy in the area of applied space quite definitely and openly is dictated by the economic and political interests of the American monopolists. One of the vivid examples of this could be the talks on the conclusion of an agreement between the United States and Western Europe on developing an international satellite system for air navigation.¹²

Commercial advantage is one of the dominating factors in the American international cooperative programs in the area of space research.

In speaking in the U.S. Senate in March 1965, the former NASA Director T. Paine stated: "The satellites which the other nations are delivering to us for launching by our carriers are significantly more expensive than the carriers usable for orbiting them.... Wherever possible we should encourage the other nations to take up the most complicated questions, such as, in particular, the German solar probe.... International cooperation is a good way to help extend our reduced budget for the purpose of obtaining the best results for our side and the nations cooperating with us."¹³ He might note that the total cost of the Helios Project (the solar probe mentioned by T. Paine) was estimated at 350 million dollars, of which 150 million would be paid by West Germany.¹⁴

In the question asked him by one of the Senators of what influence international space cooperation would have on the U.S. aerospace industry, T. Paine replied that he viewed this influence as very positive. T. Paine gave data that the foreign purchases from U.S. industrial firms under the international projects would provide the United States with foreign exchange earnings of 17 to 20 billion dollars annually.¹⁵ Virtually all the foreign satellites launched by NASA would be built with the aid of American firms.

On 27 April 1966, the Director of the American space agency stated that the international projects brought "very real benefits to the United States."

The total value of the NASA international programs carried out and in progress in 1965 was estimated at 1.1 billion dollars. Over the last 15

years approximately two-thirds of the expenditures made under the joint programs was covered by the U.S. foreign partners.¹⁶

Approximately one-half of the funds spent by other countries to carry out projects jointly with the Americans goes to the United States in the form of payment for purchased equipment, the carrier missiles and to pay for the cost of the launches. Thus, the NASA international activities contribute a significant influx of gold into the United States and aid the marketing of American aerospace industry products. In addition, since virtually all the joint projects in one way or another fit into the U.S. national space research program, the participation of foreign states in them in essence means a partial financing of the American national program.

In the summer of 1969, the U.S. secretary of state and the Japanese minister of foreign affairs signed an agreement on cooperation in the area of space development. In accord with this agreement, American industry secured the right to export to Japan unclassified equipment and technical information needed for the production of carrier missiles and satellites. On this question the State Department spokesman T. Nesbit stated that the U.S. was ready to export widely its space equipment and technology to other countries.¹⁷ Several years later the U.S. president proposed that American carrier missiles be sold to all countries in those cases when they would not be used to launch satellites competing with American ones.¹⁸

The official documents have emphasized that launching of foreign satellites under the condition of paying for the cost of these launches represents a NASA international activity of "growing significance."¹⁹

The United States, very great significance to the political aspect of international cooperation in space research.²⁰ "There is a close tie between our space program and the aims of our foreign policy....," stated A. Tasker, leader of the State Department subdivision concerned with space problems. He saw the foreign policy task of space research to create for the United States an image of a technically developed, competent and dynamic society with which the other nations would associate their interests.²¹

It is widely recognized the NASA international programs, and in particular through the channels of the U.S. Information Agency, American propaganda has endeavored to present the United States as a country which willing shares its scientific and technical achievements with other nations, here failing to mention the economic and scientific-technical benefits extracted by the United States from this cooperation.

In the political realm, in the NASA international programs an important place has been given to the developing countries. In September 1969, NASA concluded an agreement with the Indian Atomic Energy Department for organizing educational-type television broadcasts with an American satellite to nearly 50 stations serving 5,000 of the Indian villages which were

own system from the center.²² Also the analogous programs in the area of space communication have also been held with a number of the South American nations. At present the United States is actively involving the developing nations in the American program to use satellites to study the natural resources of the earth, and has already concluded a significant number of bilateral agreements for this purpose.

In addition to economic and political considerations which have guided the United States in carrying out its international space programs, scientific and technical reasons are also of important significance.

One of the basic reasons why NASA was empowered to conclude agreements with foreign nations was the necessity of creating a worldwide network of tracking and data receiving stations for the spacecraft and satellites. Many NASA agreements were concluded precisely for this purpose.²³ In certain instances, the expenditures for running these stations and their personnel are completely or partially paid by the host country. NASA also maintains close working contacts with the systems of satellite tracking stations created by the European Space Research Organization and France.²⁴

The experimental communications satellite work carried out initially by WPAF, and the meteorological and geodetic research have also required the locating of ground equipment on foreign territories.

The interest of the United States in conducting joint work is also manifested in the fact that in a number of instances foreign countries have fully assumed responsibility for carrying out important and costly scientific research provided in the American national program. The results of such research immediately becomes the property of NASA. Thus, the NASA cosmogenic research program was carried out with Canadian satellites, and West Germany carried out a complex project for developing a solar probe, now in orbit. A series of scientific discoveries and technological innovations obtained in foreign countries as a result of the cooperative programs have come into American hands.

The NASA international activities have permitted the United States to involve the best foreign scientists in carrying out NASA projects. This is the purpose of the widely organized training and retraining of foreign specialists in the area of space science and technology carried out by NASA together with the U.S. National Academy of Sciences. The conditions for the training of foreign specialists in the United States are such that the scientists and engineers usually remain in the American laboratories until they have made a significant contribution to these laboratories. Many foreign-born specialists have remained permanently to work in U.S. industry and scientific research centers.

It can thus be seen that the scientific and technical interests in conducting joint space research as well as the factors of economic and political nature contribute to the development

of cooperation between countries with different social systems. Precisely such an interest, along with the overall improvement in the state of Soviet-American relations, made it possible to conclude the Agreement between the USSR and United States on Cooperation in the Research and Use of Space for Peaceful Purposes in May 1972. However it is beyond doubt that cooperation with the USSR, as with the other socialist countries, is possible only on the basis of mutual advantage and equal rights.

Among the NASA cooperative programs with the Western European countries, the most significant was the Spacelab Program under which the European countries were responsible for developing and turning over to the United States one of the important elements for the new American space transport system. Let us take up in somewhat greater detail the history of the talks which led to the conclusion of an agreement on this program, as well as an analysis of the agreements themselves.

After the conclusion of the Apollo Program, the development of a reusable space transport system occupied the central place in the American national space research program. Among the transport spacecraft, the plans were first to develop the so-called "shuttle" for making trips between space and near-earth orbits, and secondly a transport towcraft for moving freight to higher orbits and for other purposes. It was assumed that the shuttle could make up to 100 flights in space, carrying a crew of up to seven men and up to 15 tons of freight. The shuttle would land on earth similar to an aircraft or very accurately a glider.²⁵

The decision to develop the transport shuttle was taken by the U.S. president on 7 January 1972. About 7 billion dollars were required to develop and manufacture two flying prototypes of this ship. The first manned orbital flight of the shuttle is planned for 1979, and the start of operational flights for 1980.

In compelling that Western Europe participate in its long-range space program, the United States was pursuing two main goals.

The long-range goal was to impede Western Europe from developing its own carrier missions capable of orbiting applications satellites that would compete with the American ones, since the relatively broad participation in the American program would necessitate funding that exceeded the total resources of Western Europe on the joint space projects.

The second purpose was of a more competitive and specific nature. In presenting its "post-Apollo" program as an international one, NASA was hoping to win greater support in Congress for obtaining multimillion allocations for this program (supposedly in the name of "Atlantic solidarity" and carrying out the international obligations).

After the year reached in 1966, the U.S. Congress constantly reduced the NASA budget, and by the beginning of the 1970's it had a budget that was

over the question of NASA. This led to a decline in the workload and even to the closing down of certain NASA scientific research centers. The NASA director J. Fletcher admitted that "critics of the program [NASA, author] have used this period of ambiguity to foster the impression that NASA has carried out its historic mission and now can be disbanded."²⁶

For precisely this reason, in the first stage, when the new program had still not been approved either by the president or Congress, NASA showed particular activity around this question. In offering Europe the most advantageous and broad conditions for participating in all stages of the program, but after the allocations for the program had been approved, NASA gradually narrowed its proposals for the participation of the European countries in it.

These conclusions are affirmed by the entire course of the American-European talks on the participation of Western Europe in the "post-Apollo" program and which were held over a number of years and were characterized by ups and downs in the mood of the European partners of the United States.²⁷

It was first officially proposed that Western Europe participate in the future American space program in October 1969 simultaneously with the submission of this program for review by the U.S. president. Such a proposal was contained in the statement of the NASA director, T. Faine. Subsequently there followed a series of meetings on various levels between the Europeans and the Americans, and in the course of them the given proposal was repeatedly affirmed and broadened.

For the major Western European aerospace firms, the proposals of the Americans were enticing, as they could involve large orders and profits. Some of these firms, without waiting for a coordinated decision by the Western European nations, entered into direct contact with the American firms, and obtained preliminary orders from them to design the individual systems of future transport spacecraft.

Early participation in the American program would absorb virtually all the funds allocated by the Western European nations for the joint space program. It was necessary to immediately determine the fate of the European carrier vehicles, as well as the conditions for obtaining American launchery systems needed for launching the European satellites. In September 1970 and February 1971, the chairman of the European Space Conference, the Belgian Her Lefevre, twice traveled to the United States to discuss the technical, financial and other conditions of European participation in the future U.S. space program, as well as the question of the possibility of obtaining American launch vehicles to launch the European communications satellites.

Without giving firm guarantees to sell American launch vehicles for launching European commercial satellites, the United States simultaneously

Let it be known that it would be absurd to develop independent European delivery systems since they would be obsolete and would be useless with the appearance of the American reusable transport spacecraft.

As for the participation of the Europeans in developing such spacecraft, in spite of its initial promises on the broad participation of Western Europe in the "post-apollo" program, beginning in December 1971, the United States in every possible way restricted the opportunities for such participation, and after the approval of the program for developing the transport spacecraft by President Nixon in January 1972, the Americans nullified their position and left for the Europeans only the possibility of participating in the development of one of the elements of the transport spacecraft. "NASA has obtained what it wanted," wrote the informed French journal AER ET ESPACE, "and what had been the reason for its proposals to the Europeans, namely the credits to build its transport spacecraft. Consequently, the time has passed of generosity and a policy of a 'condescending elder brother' who offers his broad aid to the 'under-developed' nations."²⁸

Unemployment in the U.S. aerospace industry as well as the circumstance that the transport spacecraft was to be used for military purposes, as was frankly stated by the NASA leaders, played an important role in reducing European participation.²⁹

After the hopes of Western Europe had evaporated for equal partnership in developing the transport spacecraft and consequently for using it to orbit satellites, and here there was no guarantee that in the future ordinary American rockets would be for sale, again the urgent question arose of developing Europe's own powerful launch vehicle. However, the profound differences of opinion between the European partners over the American proposals as well as the technical setbacks in developing the "Europe-2" rocket for a long time did not make it possible for the interested nations to come to any coordinated decision.

In January 1972, on the eve of the planned European Space Conference, President Nixon made a statement which the Western European circles interpreted as participation in a future American program, interpreted as a guarantee for the delivery of carrier missiles to Europe without any restrictions. Nixon said: "The United States is ready to provide carrier missiles to any nations and international organizations for launching satellites for peaceful purposes, if this is compatible with current international agreements."³⁰

France reacted with a certain amount of mistrust to this statement. In this question the press wrote: "France is not certain of the possibility of receiving American carriers, and the new statement by President Nixon containing the same restrictions as before should not change anything in this sense."³¹

... you have to take into account the stipulation on observability with regard to international agreements applied primarily to the agreement about the American-controlled Intelsat space communications system. Article XIV of the 1961 agreement placed serious restrictions on the participation of Communist members in other international space communications systems. (I think, in the opinion of the Intelsat assembly, would cause economic loss to the communication.) Under this pretext the United States could refuse to sell satellites to launch the European communications satellites.

In November 1971 and July 1973, after long hesitation, the European space conference decided to accept American conditions on participating in the development of the transport spacecraft. The project which was named Spacelab was to be based on a series of agreements concluded between the western European nations and also with the United States.

In August 1973, the United States and nine European countries (Belgium, Great Britain, the Netherlands, Denmark, Spain, Italy, France, West Germany and Switzerland) concluded an Intergovernmental Agreement on a Cooperative Program for the Development, Delivery and Use of a Space Laboratory for the Space Transport System. In further developing this agreement, ESRO, on behalf of the Western European countries, and NASA on behalf of the United States, on 14 September 1973 signed a memorandum which fixed the understanding on procedural and technical questions involved in carrying out the project.³⁷ Moreover, the internal relationships between the Western European partners and also between them and ESRO were regulated by still another agreement.³⁸

In accord with the understanding reached, the Western European nations intended, in working through ESRO, to develop, create and deliver an orbital laboratory to the United States by the end of 1978; this laboratory would be repeatedly put into a low orbit and returned to the earth as an inseparable component of the American transport spacecraft.³⁹ The laboratory consisting of two parts (a four-man living module and an open instrument platform) designed for conducting scientific and applied extraterrestrial research.

That orbital Spacelab was called an orbital laboratory, in actuality it was not an autonomous space object but rather one of the elements of an American spacecraft inseparably linked to it during the entire flight.

By the creation of Spacelab, the sum of which has now been estimated at 500 million dollars, Western Europe would then put it actually under the complete control of the United States. The intergovernmental agreement gave the United States the right of "full control" over the first Spacelab. According to the final determination of the purposes of its use (Article VIII). The European partners merely raised the right of joint planning and the free carrying out of experiments during the first flight; they were also provided that a pilot from one of the Western European countries would be a crew member (Article VIII, 3).

As for the conditions for the subsequent use of the American transport spacecraft by the Western European countries, in the agreements these conditions were defined very imprecisely. It was merely said that during the future Spacelab flights, the experiments would be carried out either on a cooperative or a commercial basis. In the latter instance the European partners would be given preference in comparison over third countries only in selecting the experiments (Article VII A, B). If the European nations wanted to launch a Spacelab for their own needs, they would be obliged to cover the complete launching expenses as they do presently for their satellites.

As has been assumed by the West German legal expert, von Preuschen, a majority of the future flights will be made under the condition that the Europeans pay the launching expenses.³⁵

The United States did not assume any firm obligations to order a certain number of additional Spacelabs in Western Europe.³⁶ The agreement merely provided that the United States would refrain from developing its own orbital laboratories if these would "essentially duplicate" the design and capabilities of Spacelab (Article V).

The monopolistic aspects of these agreements, in the definition of the French scientist Stoetner,³⁷ are also manifested in the fact that ESA promises to make available to NASA all information and documents dealing with Spacelab, while the United States would provide Western Europe with information on the transport spacecraft only within the limits needed for the development of Spacelab.

In signing the memorandum on the Spacelab Project, the U.S. acting secretary of state and the chairman of the European Space Conference stated that the conclusion of this agreement "marked the beginning of a new age" in space cooperation between the United States and the Western European nations.³⁸

In contrast to the agreements shows that there are no serious grounds for optimism and optimism. Western Europe acts not as an equal partner in developing the future space system, for which it has worked for a number of years, but rather as a subcontractor supplying at its own expense one of the important elements for the American space transport system.

On the basis of what has been stated, the following conclusions can be drawn:

The United States is carrying out extensive and diverse activities in the space area and these activities have been given active support by the state system. It would be wrong to underestimate the results of these activities on their influence on international political and scientific-technical life.

The legal basis for the NASA International programs were established in the National Aeronautics and Space Act approved by the U.S. Congress in 1958.

The agreements, international agreements and the "Treaty of Friendship, Commerce and Consular Rights" as well as "Trade Agreements" and "Agencies/Agreements".

Many U.S. international space programs have been aimed at extracting various unilateral benefits and advantages. In a number of agreements, the United States has imposed unequal conditions on its partners. This is true of the major international space program in accord with which Western nations have funded the development of the elements of the new American space system.

On the other hand, the experience of carrying out the Soviet-American Sino-American program shows that under the purview of the strict observance of the principles of equality and mutual benefit, the objective scientific-technical, economic and political prerequisites can be widely favorably improving cooperation in the space sphere among states with different social systems.

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15. According to a statement made by one of the NASA leaders in 1975, for several subsequent years the United States would receive 150-170 million dollars annually from foreign nations for providing carrier missiles and carrying out launches (AVIATION WEEK AND SPACE TECHNOLOGY, No 19, 1975, p. 11; No 20, 1975, p. 11).
16. "Questions About Aeronautics and Space," NASA Doc., 1976.
17. AFRICAN AFFAIRS, No 10, 1969, p. 16.
18. AFRICAN AFFAIRS, No 10, 1973, pp. 16-17.
19. "NASA International Programs," April 1973, p. 71.
20. A. P. Shadrin, "Vneshnyaya Politika SShA," (U.S. Foreign Relations and Foreign Policy), Moscow, Znaniye, 1965.
21. A. P. Shadrin, *ibid.*, p. 15.
22. For more detail on this project, see Chapter 3 (Part II).
23. NASA has ground stations on the territory of other states.
24. An official agreement between NASA and ESRG on these questions, see Doc. 100-30-1, pp. 300-304. At present this station belongs to the European Space Agency.

25. "Space Shuttle," Rockwell International, Space Division, 1976.
26. J. Fletcher, "Remarks to the Salt Lake City Rotary Club," NASA NEWS, 6 June 1972, p 1.
27. A. Hocker, "The Discussions Between Europe and the United States on Participation in the Post-Apollo Program," ESRO/ELDO BULLETIN, No 19, 1972, pp 4-7.
28. AIG ET (44980), No 442, 1972, p 15.
29. The NASA director, J. Fletcher, in a speech of 6 June 1972, said: "The spacecraft will be of important military use" (J. Fletcher, Op. cit., p 1).
30. AIG ET (44980), No 497, 1972, pp 16-17.
31. Ibid., p 17.
32. The texts of the agreement can be found in: "Hearings Before the Committee on Aeronautical and Space Sciences, 30 October 1973," Washington, U.S. Government Printing Office, 1974, pp 121-135.
33. (W. ESRO/c (73)), Rev. 3.
34. The first flight is planned for 1980.
35. L. T. von Kreusen, "International Cooperation in the Use of Space Laboratories," "Proc. XVIIIth Colloq. Law Outer Space," California, 1975, p 210.
36. In August 1976, NASA informed the European Space Agency of its intention to order a second Spacelab.
37. A. W. Stuebner, "Stations spatiales presentes et futures: technique et droit," "Proc. XVII Colloq. Law Outer Space," pp 320-321.
38. ISW-SPACELABTER, No 5, 1973, p 2.

CHAPTER 6: THE ROLE OF THE UNITED NATIONS AND INTERNATIONAL NONGOVERNMENTAL ORGANIZATIONS IN WORKING OUT AND IMPLEMENTING SPACE PROGRAMS

The presently existing international "space" organizations can conditionally be divided into two groups: the so-called operational organizations set up for directly carrying out international scientific or applied space programs, and organizations the mission of which includes assisting the development of space research, the joint discussion of the obtained results as well as a study and elaboration of the legal aspects of space development.

In the former of these groups, belong, for example, the European Space Agency as well as the international Intersputnik and Intelsat communications satellite organizations. They, as a rule, are established by states, they possess large financial assets and have their own scientific and technical facilities.

The second group of organizations (to which this chapter is devoted), without carrying out independent work involving the use of space equipment, nevertheless plays an important role in developing cooperation in space research on the broadest international basis. Among these organizations we will find both interstate as well as international nongovernmental organizations.

1. The United Nations and its Specialized Agencies

The Resolution of the UN General Assembly approved in 1961 states that the United Nations should be the "center for international cooperation in the research and use of space for peaceful purposes."¹ In the UN system, the Committee for the Use of Space for Peaceful Purposes, a body specially established by the UN General Assembly, plays primarily the role of such a center.

The special role of the Committee is explained by the fact that it is the sole official intergovernmental body in which the states belonging to different social systems can jointly discuss the broadest range of political, legal and scientific-technical questions arising in the process of space development.

Initially the Committee was confronted with numerous difficulties caused by American attempts to secure in one form or another a predominant position in the committee and its bodies. The USSR, in initiating the proposal to organize extensive international cooperation in space development through the United Nations, saw to it that such cooperation was equally based. Since space problems were closely linked to important aspects of ensuring state security, the principle of equality in the organizing and functioning of the UN Space Committee was of decisive significance. For this reason it is quite natural that the USSR, the other socialist states, as well as India and the UAR refused to participate in the committee's work with its initial membership when of the 18 member states of the Committee, 13 were U.S. allies in political-military blocs.²

On 17 December 1959, the UN General Assembly unanimously approved Resolution 1472 (XIV) which established the Committee for the Use of Space for Peaceful Purposes as one of the permanent UN committees and established its new membership. On the basis of a compromise agreement, the Committee included 24 nations representing the three basic groups of states existing in the modern world.³

However, another several years past before conditions could be created needed for the normal work of the Committee and it could begin its practical activities. The first session of the Committee with its full membership was held only in March 1962.

The UN Space Committee was confronted with a series of tasks, including aiding further space research started during the period of the IGY, the disseminating of information, providing help in carrying out national research programs, and studying the legal problems of space development. The Committee had to provide a close tie with all governmental and non-governmental organizations involved in space questions.

For a more concrete study of the ways and methods for organizing cooperation, the Committee organized two subcommittees each with a full membership: one for the purpose of discussing scientific and technical questions, and the other on the legal aspects of cooperation. Later on under the Committee and its scientific and technical subcommittee, three special work groups were formed: for the use of satellites for navigation purposes, direct communication and the study of earth resources from space.⁵ The Committee submits reports on its activities to the UN General Assembly.

In accord with the understanding reached in 1961, the decisions of the Committee and its bodies are taken without voting on the basis of the rule of consensus. The consensual taking of decisions without voting, is being used presently ever more widely in the UN bodies and at international conferences, prevents the imposition of unacceptable decisions on states. The positive significance of the consensus rule, in particular for the codification and progressive development of international law, has been noted both by Soviet as well as foreign international law experts.⁶

The close link between scientific-technical and legal aspects of cooperation among states in the development of space is clearly manifested in the role which the UN Space Committee plays in working out the procedures of international space law. Within this body, scientists, diplomats and legal experts have an opportunity to discuss jointly the most complex problems of international law posed by the development of the leading areas of science and technology.

In accord with Article 13 of the UN Charter, the General Assembly is bound to organize research and make recommendations for the purposes of encouraging and progressively developing international law. Consequently, assistance in the development of international space law is part of the direct duties of the United Nations in accord with its Charter. Due to the universal nature of its membership and the tasks confronting it, the United Nations and its bodies, including the Space Committee, are the most suitable place for an international legal regulation of the space activities of states.

Upon the initiative and with the active participation of the USSR and the other socialist countries, the United Nations has been concerned with the examination of a majority of the legal questions of cooperation among states in space. The USSR and other socialist countries have endeavored to prevent space from being turned into an arena of international conflicts and to make it an area of peaceful cooperation among all states of the world. The elaboration of the agreements which presently comprise the basis of international space law and order was a major achievement of the UN Space Committee and its legal subcommittee.⁷

At present the practice of elaborating new common procedures of international space law has become even more complex. In accord with the UN General Assembly recommendations, the Legal Subcommittee of the UN Space Committee is to study and coordinate the drafts submitted by the states; then the approved drafts are turned over for further review to the UN Space Committee and through it to the UN General Assembly which, in turn, in approving these drafts, appends them to its resolutions and recommends them for signing by all interested states.⁸

In accord with the resolution approved by the UN General Assembly at its 31st session in 1976, the Legal Subcommittee of the UN Space Committee with an equal degree of priority is to be concerned with examining a draft treaty for the moon, the question of working out the principles for the use of satellites by states for direct television broadcasting, and the question of the legal consequences of remote sounding of the earth from space.

At present, almost 20 years after the establishing of the UN Space Committee, it can definitely be said that its basic achievement has been law making activities in the area of space law, and the regulating of legal relationships among states in the process of the development of space.

The Committee has been significantly less successful in the immediate organizing of international space research programs. As can be seen from the preceding text, this aspect of state activities in space has been basically the concern of other organizations. Such work is also carried out on the basis of bilateral and multilateral agreements. The UN Space Committee as yet does not have any substantial influence on the specific types of joint space programs.

Nevertheless it would be wrong to underestimate the role of the Committee as a catalyst of international cooperation in the scientific and technical area. Thus, the Committee carried out important work to organize the international research rocket launching ranges under UN aegis.

In 1962, the UN General Assembly directed the attention of states to the advisability of setting up international rocket ranges, and approved the basic principles which their establishment should meet.⁹ The setting up of such ranges by individual nations or groups of nations should contribute to a deepening of international collaboration in the development of space and the training of specialists in the developing nations. The carrying out of systematic rocket sounding in the equatorial regions is of particular scientific interest for research in the area of meteorology and aeronomy.

The principles which the states should follow in setting up the international ranges are contained in the report of the UN Space Committee of 27 September 1962.¹⁰ These principles stipulate, in particular, that responsibility for the leadership of the ranges and their operation is born by the states on whose territory these ranges are located. The ranges can be used only for carrying out scientific experiments for peaceful purposes. The UN Space Committee and the world scientific community are to be informed ahead of time on the purposes and preliminary schedule for conducting the experiments. The results of the research carried out should be published in unclassified periodicals.

The relations between the range-owning states and the user states are determined on the basis of the corresponding agreements. At each range a consultative council is to be set up consisting of representatives from the scientific circles of the user nations. The range is taken over by the United Nations by the General Assembly in accord with a recommendation of the UN Space Committee.

The governments of India and Argentina turned to the United Nations with a request for it to take over the rocket ranges being developed on their territories. International groups of scientists who visited the site of the ranges for an inspection recommended that this request be granted. In response to the recommendations of the UN Space Committee, the General Assembly in 1965 put the Indian rocket range in Thumba under UN aegis, and in 1969, the Argentine range at Mar del Plata. Brazil is also considering the possibility of establishing an international range on its territory. On the question of organizing international ranges, Italy and France have officially announced that the equatorial mobile range of San Marco and the

space center of Kourou in Guiana which belong to them could also be used for joint international projects under UN sponsorship.

Another important measure which has had a catalyzing effect on the development of international space cooperation was the setting up of the International Conference for Research and Use of Space for Peaceful Purposes by the United Nations in August 1968 in Vienna. The conference organized under Soviet initiative has become a worldwide forum at which 78 nations and 13 international organizations summed up the first decade of space research. At the conference the focus was to show in what manner the results of this research could help in solving the practical problems confronting the developing nations. At the conference around 200 papers were presented and these were heard at 10 special-subject sessions as well as in the course of special discussions.¹¹

The UN Space Committee also carries out useful activity in coordinating the work of various international organizations in the space research area. Contributing to this work, in particular, are the reviews published regularly by the UN Secretariat upon the request of the Committee of activities and resources of the United Nations, its specialized agencies and the other competent international bodies involved in the use of space for peaceful purposes.¹² In accord with Article XI of the space treaty, the UN Secretariat is also concerned with the collection and distribution of information concerning the activities of states in space. Such information is provided on a voluntary basis by many countries, and is published periodically in the series of UN documents. Since 1962, the Department on Space Questions of the UN Secretariat has been keeping an official register in which information provided by the states on objects launched into space is kept.¹³

The UN Space Committee and Its Scientific and Technical Subcommittee devote a great deal of attention to seeking out opportunities to provide aid to the developing nations in the area of education and professional training for personnel involved in the practical use of space technology. Over the last several years, the "UN Program for the Application of Space Technology" has been carried out under the leadership of the Committee. Within this program, a number of UN member nations have provided scholarships for training specialists from the developing nations. For the same purposes, each year the United Nations holds meetings, seminars and practical sessions in various nations, in particular on questions related to the use of remote sounding methods for studying earth resources and environmental conservation. The 31st General Assembly Session approved the UN program on the use of space technology and recommended that it be continued.

Within the system of the United Nations, a whole series of groups of specialized agencies is also concerned to one degree or another with the questions of cooperation in space development.

The International Telecommunication Union (ITU) holds first place among them in terms of the quantity and range of work related to space. Space research is inconceivable without the use of telecommunications. The ITU and the bodies under it are concerned with allocating the radio bands on an international basis for various types of space activities and radio-astronomy for the purpose of preventing interference.

The wireless communications regulations worked out at the worldwide administrative radio conferences of the ITU are also applied to the International Telecommunication Convention and have the force of an international treaty. The first attempt at allocating radio bands for space research was made in 1959. However in 1963 it was essential to revise the assigning of frequency bands for the various services of space wireless communications, and this was explained by the limited nature of the radio spectrum and the ever growing demand for the use of radio frequencies.

In June-July 1971, the Worldwide Administrative Radio Conference on Space Communications was reconvened in Geneva. On the basis of the proposals by ITU members, the conference at which 100 states were represented reviewed the entire range of questions related to the use of wireless communications in the development of space, including the problem of the placing of satellites in a geostationary orbit and the use of satellites for direct broadcasting. The wireless communications regulation which was revised at this conference came into force on 1 January 1973. The last Worldwide Administrative Radio Conference on Space Communications was held in January-February 1977. At this conference a number of important decisions were taken related to assigning positions for radio broadcasting satellites in a geostationary orbit.¹⁴

The World Meteorological Organization (WMO) is another example of a specialized UN agency which is largely involved with space research. The World Weather Service and the Program for Studying Global Atmospheric Processes are the two basic long-range WMO projects which to a decisive degree rely on the use of satellites.¹⁵

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has shown an ever greater interest in the use of space technology. In particular, a specially created group of experts for a number of years has been concerned with working out the areas of UNESCO activities on the use of space communications for educational, scientific and cultural purposes.

The use of satellites for the purposes of navigation, radio position finding of aircraft and ships and traffic control are within the sphere of interests of the International Civil Aviation Organization (ICAO) and the Intergovernmental Maritime Consultative Organization (IMCO). The last of these organizations has done significant work in discussing the technical, economic and legal aspects of an international satellite system for serving maritime navigation, and in 1975 convened an intergovernmental conference for examining the question of establishing the appropriate international organization.¹⁶

The Food and Agriculture Organization (FAO) also has contributed to the development of international cooperation in the area of using satellites to study and protect the earth's resources, and the World Health Organization (WHO) has been interested in the possibilities of utilizing the most recent achievements in the area of space biology and medicine for public health.

The above-mentioned as well as other specialized UN agencies have made their contribution to developing international space cooperation mainly by exchanging information and coordinating national research programs or initiating international projects. Some of them, in particular the ITU, have carried out important functions of international regulation and codification in this area. None of these organizations is engaged in direct activities in space.¹⁷

2. International Nongovernmental Organizations

Let us examine the structure and the basic forms of activity of two nongovernmental scientific organizations which play an important role in the development of international space cooperation. These are the International Committee for Space Research (COSPAR) and the International Astronautical Federation.¹⁸

The significance of these organizations in establishing contacts between scientists and scientific organizations in individual countries was particularly great during the initial period of space activities, when the intergovernmental organizations in the given area had not yet been set up or were not functioning. Because of this COSPAR activities assumed a semi-official nature, and this was reflected in its charter, procedural rules and methods of work. The resolutions and recommendations made by COSPAR have had an indirect impact on the law-making process in the area of space law. Within the International Astronautical Federation since 1960 there has existed the International Institute of Space Law and this has been actively concerned with the doctrinal elaboration of the most urgent legal problems.

Although COSPAR and the International Astronautical Federation, in being nongovernmental organizations, do not possess an international legal personality, their study is of serious interest for the science of international space law.

G. I. Morozov has quite rightly noted that the absence of a legal personality in international nongovernmental organizations "cannot explain the insufficient attention paid to them, for many of them have played a very significant role in modern international relations."¹⁹ One cannot help but also agree with G. I. Morozov that "to deny the role of the international nongovernmental organizations in international relations and the presence of a certain minimum of legal elements which allow these organizations to operate means to ignore objective facts. However, to identify

these organizations with intergovernmental ones and to recognize them as principals of international law is at least unrealistic."²⁰

The International Committee for Space Research (COSPAR) was founded in 1958 for continuing work in the area of cooperation in space research after the end of the IGY (1957-1958). COSPAR arose with the rights of a special committee of the International Council of Scientific Unions, the organization which initiated the IGY.²¹ This made an impression on the structure and forms of activity of COSPAR.

The members of COSPAR are the academies of sciences and their equivalent scientific institutions in 34 countries, as well as the following 12 international scientific unions which comprise the International Council of Scientific Unions: the International Astronomical Union, the International Geodetic and Geophysical Union, the International Union of Theoretical and Applied Physics, the International Union of Biological Sciences, the International Union of Theoretical and Applied Mechanics, the International Union of Physiological Sciences, the International Biochemical Union, the International Scientific Radio Union, the International Mathematics Union, the International Union of Theoretical and Applied Biophysics, the International Union of Theoretical and Applied Chemistry, and the International Union of Geological Sciences.

Each of these scientific unions is concerned with various aspects of space research. The participation of the unions in COSPAR activities makes it possible for it to consider the interests of the various scientific disciplines in examining the results and the plans of space research.

During the first year of its existence (up to November 1959), COSPAR was directed by a temporary charter. Life showed that certain provisions of this charter, particularly those concerned with membership in the Committee as well as the structure and powers of its leading bodies, did not meet the serious tasks confronting COSPAR, and did not create the bases for equal participation in its work for the scientific organizations of the socialist countries. Due to the fact that the membership and organizational principles of COSPAR did not provide the grounds for fruitful international cooperation in carrying out scientific research in space, and the proposals of the USSR Academy of Sciences aimed at broadening the representation of scientists from different nations on the Committee were rejected by a majority of votes, the USSR Academy of Sciences was forced to abandon further participation in COSPAR work. It resumed its activities in COSPAR only after its new charter had come into force, and this appeared after extensive discussions and was the result of a compromise agreement between the scientific agencies of various nations. The history of the elaboration of the COSPAR charter indicates that international nongovernmental organizations in the space area are closely tied to interstate relations and are influenced by the contradictions between the various socio-economic systems.

According to the charter approved in November 1959, the general assembly, the executive council and the bureau are the basic leading COSPAR bodies. In the intervals between the general assemblies, the activities of the Committee are directed by the executive council which includes seven representatives from the scientific institutions of the countries elected at the general assembly and one representative from all the scientific member unions of COSPAR. The executive council can meet with a restricted membership of the seven elected members who form the bureau. All the decisions of the executive council are considered binding only in the instance that they are supported by two-thirds of the votes of the elected members.

The charter specially stipulates that the voting method for the COSPAR officials (the president, two vice presidents and the four bureau members) "should be such as to provide representation corresponding to the distribution of basic efforts in space research among the COSPAR members" (Article III).

In accord with this provision, the procedural rules of COSPAR provide a special procedure for electing officials under which one of the COSPAR vice presidents is elected by the general assembly from candidates submitted by the USSR Academy of Sciences and the other from among candidates submitted by the U.S. National Academy of Sciences. Two members of the bureau are elected from a list of candidates submitted by one vice president, and the other two from a list of candidates submitted by the other vice president. The president is elected from among candidates submitted by the executive council or directly by the general assembly.

The basic mission of COSPAR is on an international scale to contribute to progress in all types of scientific research conducted using rockets, rocket transports and balloons (Article I of the Charter). COSPAR is concerned only with fundamental scientific research, excluding from its activities the problems of space technology related to the designing of missiles, engines, missile flight control, and so forth.

Like other international scientific organizations, COSPAR does not directly conduct scientific research. Its sessions discuss the obtained results and work out recommendations on planning and coordinating scientific experiments carried out under national and international programs. COSPAR does not have the right to pass any binding decisions relating to the national scientific research programs.

COSPAR carries out its basic scientific activities in eight working groups. At the annually held sessions of these groups, information is exchanged on space research programs being carried out and planned. The recommendations of the working groups represent the authoritative opinion of the international collective of scientists in a certain area of space science. Although these recommendations cannot be viewed as international legal documents, they do carry great weight in scientific circles. In carrying out their space activities, as a rule, the states consider them.

The first COSPAR working group is concerned with the scientific problems of satellite tracking using optical and radio equipment, as well as studying the dynamics of satellite motion. This keeps a list of the tracking stations and this is published in the COSPAR Information Bulletin. The group has worked out a special manual on organizing optical observation stations. It gives great attention to preparing international cooperative programs in the area of space geodesy.

The second and fourth COSPAR working groups are concerned with examining the results and coordinating scientific experiments to study the interplanetary medium, the magnetosphere and the upper atmosphere. One of these groups participated in elaborating a new major international draft on studying the magnetosphere. The result of the work of the fourth group was the compilation of an "International Atmosphere Reference" which gave important information for experimenters and practical workers on the average characteristics and composition of the atmosphere at various altitudes and their variations related to the time of day, season, phase of solar activity, and so forth.

The moon and the planets of the solar system are the subject of study of the seventh working group. The problems of the use of space technology for solving astrophysical problems, including the forecasting of solar flares, are the concern of the third COSPAR working group. The sixth working group assists in international cooperation in the area of using satellites and rockets for meteorological purposes and the investigation of the earth from space. With its help, in particular, the rocket sensing of the atmosphere has been coordinated in the various countries. The eighth group examines the theoretical and experimental problems related to the behavior of various materials under space conditions. Finally, one other COSPAR group (the fifth) has as its task an investigation of space biology problems.

In 1962, the COSPAR consultative group on the questions of the potentially harmful consequences of experiments conducted in space was established. This group has operated as the basic center of the International Council of Scientific Unions for reviewing the consequences of space experiments which could represent a danger from the viewpoint of changing the natural environment or cause interference for further research. The recommendations of the group, after their approval by the COSPAR executive council, have been disseminated in the various nations and international organizations. In particular, this group has given a great deal of attention to the measures of preventing microbiological contamination of the earth and planets in the course of space experiments.²³

The COSPAR sessions are held annually in various countries. During these sessions, in addition to scientific and organizational meetings, the general assembly of COSPAR members is held and at this papers are presented by the national scientific institutions and international organizations on the results of space research conducted during the year. Thus, the COSPAR

sessions annually sum up the results of work done throughout the world on the study of space.

COSPAR publishes an information bulletin which appears in English,²⁴ as well as the works of its annual sessions. It maintains close ties with a number of international organizations, including the UN Space Committee, which has granted it consultative status in accord with the UN General Assembly Resolution 1721 (XVI) of 20 December 1961.²⁵

The International Astronautics Federation is the other nongovernmental scientific organization which aids actively in extensive international exchange of results and plans in the area of the development of space science and technology.²⁶ The federation arose in 1950 as an association of eight national societies interested in the problems of rocket production and space research. The International Astronautical Federation, in the view of its founders, should become that body which would make it possible to concentrate the efforts of many countries for the preparations and subsequent execution of an interplanetary flight.

The first federation charter approved in 1952 in Stuttgart stated that the Federation "set as its goal to aid in the founding of an International Astronautical Scientific Research Institute the task of which would be to carry out space flights for nonmilitary purposes" (Article 6). Although this task of the Federation has remained unrealized and obviously could not be carried out by the forces of an international public organization, it plays an important role in the development of international cooperation in space research. Its activities increased particularly after the launching of the first satellite.

The Federation is presently led by a charter approved in 1961 in Washington, with amendments made in 1968 and 1974. It brings together around 60 national astronautical societies from 37 countries. Each nation can be represented on the Federation by several national societies, but only one of them has the right to vote in the leading bodies.

The charter reinforces the provision according to which the role of the country in space research should be considered in the elections to the leading bodies of the Federation, as well as the principle of a just geographic distribution.

The general assembly is the superior body of the Federation. Its membership includes one representative from each federation member. The assembly meets annually in different regions of the world simultaneously with the astronautical congresses. In the intervals between the sessions of the assembly, the current work is carried out by a bureau.

Within the Federation several standing committees have been created. These are for bioastronautics, on educational questions, applications satellites, publications, and others. The astronautical congresses which are organized

annually by the Federation hold a central place in its activities. The first such congress was held in Paris in 1950. Since then they have been held regularly in different nations of the world. The sessions of the astronautical congresses are attended by scientists and specialists of virtually all nations engaged in work in the area of space research. The subjects of the papers given at the congresses, as a rule, encompass a broad range of scientific and technical questions related to space research, including questions of a social and legal nature.

The Federation maintains close ties with a number of intergovernmental organizations. In particular, it has been given consultative status under UNESCO as well as the UN Economic and Social Council, and also observer status on the UN Space Committee.

Soviet scientists have participated in the activities of the Federation starting with its sixth congress (1955). In 1956, at the seventh International Astronautical Congress in Rome, the Commission on Interplanetary Communications under the USSR Academy of Sciences²⁷ was admitted to the Federation.

Within the framework and under the leadership of the Federation two other international organizations established in 1960 also carry out their activities. These are the International Academy of Astronautics²⁸ and the International Institute of Space Law the membership of which includes scientists elected for life who are well known for their achievements in the area of astronautics and space law.

The interest of the Federation in the problems of space law was initially reflected in the establishing of the Standing Legal Committee. This was established in August 1958 during the Ninth International Astronautical Congress upon the initiative of the prominent American legal expert E. Haley who at that time was the Federation president. In 1959, before the Committee had actually begun its work, a decision was made to transform it into the International Space Law Institute. The charter of the Institute was approved in August 1960, in Stockholm.

The tasks of the Institute include the holding of international colloquiums on space law, the carrying out of special research, publishing activities, the awarding of prizes, and so forth. At present around 400 legal experts from 48 nations are members of the Institute. The work of the Institute is headed by a council of directors with 15 members elected by the general assembly for a period of 3 years. In electing the members of the council, the principle of adequate representation of the various legal systems of the world should be considered.

The basic activities of the Institute (like those of the International Academy of Astronautics, consist in organizing scientific conferences and publishing the works of these conferences.²⁹ Under the leadership of the Institute each year international colloquiums are held on space law. These

contribute to the scientific elaboration of the most complex questions of international space law. The organizing of these colloquiums within the international astronomical congresses provides the representatives of natural and social sciences with an unique opportunity to discuss jointly the scientific-technical and social problems related to the study and development of space.³⁰

In describing the significance of COSPAR and the International Astronautical Federation, the American legal experts S. Lay and H. Taubenfeld have jointly emphasized their important role in exchanging scientific and technical information and in "the generating of ideas." As these authors note, COSPAR and the Federation, being nongovernmental organizations, do not establish international procedures directly, although in certain instances their research and activities can bear directly on the positions held by the governments on the corresponding questions.³¹

Above it was already mentioned that to one degree or another a large number of governmental and nongovernmental international organizations are concerned with space problems. However, as yet there is no intergovernmental space organization which in terms of its membership and functions would have an universal character. In the literature the idea of creating such an organization has been voiced, for example, similar to the International Atomic Energy Agency. Here the plan is that the new organization should be concerned both with the "operational" aspect of cooperation among states in space development, that is, the use of space rocketry, as well as the legal regulation of space activities.

Considering the scope of the national and international space programs and their proportional amount in international scientific and technical life, these ideas merit the closest study. However it is obvious that the creation of such an organization would be justified only in the instance that it can introduce a qualitatively new element in international space cooperation, and would not duplicate the already existing and successfully operating channels of cooperation.

FOOTNOTES

1. Resolution of the UN General Assembly 1721 (XVI) of 20 December 1961.
2. The Temporary UN Committee for the Use of Space for Peaceful Purposes with such a membership was set up by the Resolution of the UN General Assembly 1348 (XIII) of 13 December 1958.
3. In 1961 and 1973, the membership of the Committee was increased initially up to 28, and then up to 37 states (Resolution of the UN General Assembly 1721 (XVI) of 20 December 1961 and 3182 (XXVIII) of 18 December 1973). For more detail on the history of the setting up of the UN Space Committee, see: F. N. Kovalev, "The UN Committee

on the Use of Space for Peaceful Purposes," "Kosmos i Mezhdunarodnoye Sotrudnichestvo" [Space and International Cooperation], Moscow, Mezhdunarodnyye Otnosheniya, 1963, pp 77-109.

4. Of great importance for increasing the work of the Committee was the Resolution of the UN General Assembly 1721 (XVI) of 20 December 1961.
5. For more detail on the activities of the working groups, see Chapters 3, 4 and 6 (Part II).
6. See, for example, A. P. Movchan, "Problemy Kodifikatsii i Progressivnogo Razvitiya Mezhdunarodnogo Prava" [Problems of Codification and Progressive Development of International Law], Doctoral Dissertation Resume, Moscow, 1974, p 25; E. R. Finch and A. L. Moore, "Outer Space Law and the Global Community," THE INTERNATIONAL LAWYER, No 4, 1974, p 761; E. Galloway, "The Future of Space Law," "Proc. XIX Colloq. Law Outer Space," California, 1977, p 7.
7. As was noted above, a special systematic examination of these agreements is not part of the current research. The corresponding provisions of the agreements have been analyzed in the work in relation to the specific problems of cooperation. For a detailed history of the elaboration and an analysis of these agreements, see: G. P. Zhukov, "Kosmicheskoye Pravo," Moscow, Mezhdunarodnyye Otnosheniya, 1966; G. P. Zhukov, "The Questions of the Peaceful Use of Space in UN Activities," "OON. Itogi, Tendentsii Perspektivy" [The United Nations. Results, Friends and Prospects], Moscow, Mezhdunarodnyye Otnosheniya, 1970, pp 188-228; G. P. Zhukov, "Mezhdunarodnoye Kosmicheskoye Pravo," Moscow, Znaniye, 1971; Yu. M. Kolosov, "Bor'ba za Mirnyy Kosmos" [The Struggle for Peaceful Space], Moscow, Mezhdunarodnoye Otnosheniya, 1968; A. S. Piradov, "Kosmos i Mezhdunarodnoye Pravo," Moscow, Znaniye, 1970; A. S. Piradov, "The Struggle of the USSR for Elaborating the Provisions of International Space Law," "Tendentsii Razvitiya Kosmicheskogo Prava" [Development Trends in Space Law], Moscow, Nauka, 1971, pp 5-32; G. P. Zadorozhnyy, "The International Legal Status of Space," "Kurs Mezhdunarodnogo Prava," Moscow, 1972, pp 154-161; "Mezhdunarodnoye Kosmicheskoye Pravo" [International Space Law], edited by A. S. Piradov, Moscow, Mezhdunarodnyye Otnosheniya, 1974, and so forth.
8. V. M. Yanovskiy, "The Role of the United Nations in Shaping the Provisions of Space Law," SOVETSKOYE GOSUDARSTVO I PRAVO, No 11, 1969, pp 65-68.
9. Resolution of the UN General Assembly 1802 (XVII) of 14 December 1962.
10. Official Reports of the General Assembly, 17th Session, Appendices, Point 27 of the Agenda, Doc. A/5181.

11. "Practical Benefits of Space Exploration," (A Digest of Papers Presented at the UN Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 1968), New York, United Nations, 1969; "Space Exploration and Applications," United Nations Publication, N E.69.1.16, Vols 1-11.
12. See, for example: Un Doc. A/AC 105/100.
13. B. G. Mayorskiy, "The Registration of Space Objects," "Mezhdunarodnoye Kosmicheskoye Pravo," pp 125-142. The importance of this UN activity has increased even more after the Convention on the Registration of Objects Launched in Space came into force on 15 September 1976.
14. For the activities of the ITU, see: P. I. Lukin, "The Use of Satellites for Radio Communications," "Pravovyye Aspekty Ispol'zovaniya Iskusstvennykh Sputnikov dlya Tseley Meteorologii i Radiosvyazi" [Legal Aspects of the Use of Satellites for Meteorological and Radio Communications Purposes], Edited by N. A. Ushakov, Moscow, Nauka, 1970, pp 103-126; P. I. Lukin, "Communications Satellites and International Relations," "Kosmos i Problema Vseobshchego Mira" [Space and the Problem of Universal Peace], Edited by G. P. Zadorozhnyy, Moscow, Nauka, 1966, pp 152-160; G. P. Zhukov, "Kosmicheskoye Pravo," pp 178-198.
15. For more detail on this see Chapter 5 (Part II). See also: E. G. Vasilevskaya, "Legal Problems of Space Meteorology and International Cooperation," in the book: "Pravovyye Aspekty Ispol'zovaniya Iskusstvennykh Sputnikov dlya Tseley Meteorologii i Radiosvyazi," pp 65-102.
16. The second and third sessions of this conference were held in 1976 (for more detail on this see Chapter 4 (Part II)).
17. For the role of the specialized UN agencies in the exploration and development of space, see UN Doc. A/AC.105/100.
18. For more detail on the history of the founding of these organizations and their activities in the initial period, see: "Kosmos i Mezhdunarodnoye Pravo," Edited by Ye. A. Korovin, Moscow, Mezhdunarodnyye Otnosheniya, 1962, pp 153-170.
19. G. I. Morozov, "Mezhdunarodnyye Organizatsii (Nekotoryye Voprosy Teorii)" [International Organizations (Certain Questions of Theory)], Moscow, Mysl', 1974, p 48.
20. Ibid., p 317.
21. Ye. D. Lebedkina, "Mezhdunarodnyy Sovet Nauchnykh Soyuzov i Akademiya Nauk SSSR" [The International Council of Scientific Unions and the USSR Academy of Sciences], Moscow, Nauka, 1974, pp 185-196.

22. Charter of COSPAR (November, 1959).
23. In 1972, the activities of this consultative group were temporarily halted.
24. See COSPAR INFORMATION BULLETIN, Nos. 1-76, 1960-1976.
25. For COSPAR also see: R. W. Porter, "International Scientific Community: ICSU and COSPAR," "International Cooperation in Outer Space: A Symposium," U.S. Senate, Doc. N 57-92, 1971.
26. On the history of the creation of the Federation, see: A. G. Haley, "Space Law and Government," New York, 1963, pp 343-380; "International Astronautical Federation," Paris, 1971.
27. Later this commission was renamed the Commission on the Research and Use of Space. Since 1976, the Interkosmos Council of the USSR Academy of Sciences has been a member of the Federation.
28. For the history of the founding and activity of the Academy, see: "The International Academy of Astronautics. The First Decade," Paris, 1970; C. S. Draper, "International Academy of Astronautics," "International Cooperation in Outer Space: A Symposium," pp 565-574.
29. Also known are such publications of the Academy and Institute as the major dictionary on astronautics in seven European languages, the Journal ASTRONAUTICA ACTA, the annual bibliographies on space law, and so forth.
30. For more detail on the institute, see: E. Pépin, "International Institute of Space Law," "International Cooperation in Outer Space: A Symposium," pp 575-580.
31. S. H. Lay and N. J. Taubenfeld, "The Law Relating to Activities of Man in Space," Chicago, 1970, p 238.

PART II: LEGAL PROBLEMS OF INTERNATIONAL APPLICATION SPACE SYSTEMS

CHAPTER 1: THE USE OF SPACE FOR EARTH-ORIENTED PURPOSES AND STATE SOVEREIGNTY

In the now customary phrase "research and use" of space, emphasis more and more is being put on the word "use." This is not a playing down of the role of fundamental research in space which in the future will hold the most important place in elucidating the true picture and laws of the world around us, but rather a quite natural desire to more rapidly put space to work for man and to help in solving many terrestrial problems.

Communications, meteorology, navigation, and the study of the natural resources of the earth--these are the basic areas of human economic activity which are now inconceivable without the use of space equipment. In the sphere of the practical applications of astronautics, the benefit of extensive international cooperation is particularly great.

The designated areas of space activity directly involve the political and economic interests of states. For this reason the international legal problems which must be solved in organizing cooperation assume particular urgency.

A majority of these problems to one degree or another is related to the principle of the respect for state sovereignty, underlying modern international law. The answer to the question of whether or not the given specific type of space activity could influence the realization of a state's inalienable right to sovereignty acts as the starting point in determining the need to elaborate special legal conditions for this type of activity. This is why the problem of state sovereignty in terms of the applied use of space has a general nature and is of great theoretical and practical significance.

Sourgeois doctrine of international space law has rather well confused the question of the role of the principle of state sovereignty in international space law. During the first years of the space age, certain Western international law experts used the universal recognition of the principle of the freedom of research and use of space as a pretext for attacking state sovereignty generally, declaring it an "obsolete" concept in the space age.

Now we are witness of a new attack on state sovereignty related to the incipient age of the active use of space for the practical needs of man.

However, it would be wrong to depict the picture as if such a position was held by all or a majority of the representatives in the bourgeois science of space law. Many legal experts in the developing and capitalist countries who have investigated these questions approach this problem realistically. In discussing the various aspects of the legal regulation of the applied types of space activity in the United Nations, a majority of nations has actively come to the defense of state sovereignty. At the same time, American representatives in the United Nations and a number of American international legal experts see the principle of respect for state sovereignty merely as an interference in the earth-oriented use of space.

The international applications space systems based on national economic satellites¹, are firmly entrenched in the life of many countries and peoples. Telephone, television and other types of long distance communications for a number of years have been carried out by international communications organizations and systems via the Intersputnik and Intelsat satellites. Upon the initiative of an intergovernmental maritime consulting organization, at present a new international organization has been established for a maritime satellite system. The nations of Western Europe, the United States and Canada are working on the plans for setting up an experimental Aerosat satellite system designed to monitor air navigation over the Atlantic. Weather satellites are also of decisive significance in carrying out the global cooperative programs in the area of meteorology.

The UN Space Committee for several years has been concerned with examining the legal and organizational questions related to two other types of the practical use of space: studying earth resources from space and direct television broadcasting via satellites. The prospects of creating international orbital stations which have come significantly closer as a result of carrying out the Soyuz--Apollo Project open the way to the integrated use of such stations for solving a whole series of national economic problems.

Common to all types of applied space activity is the fact that the employed space devices in the literal and figurative sense of the word are facing the earth. The applications satellites are designed not for space research as such, but rather for solving purely terrestrial problems; many of them "participate" in human economic activity.

As was noted by one of the French authors, the applications satellites have posed greater problems on the earth than in space.² These problems involve both relations between the participants in the international applications space systems (the necessity of ensuring the legal equality of the states), as well as the conditions whereby it would be possible to carry out various types of space activities over foreign territories.

From the political and legal viewpoint, the greatest complexity has arisen over the questions of studying earth resources from space and direct television broadcasting via satellites. In the first instance it has been a question of the necessity of preventing violations of the sovereign rights of a state to its natural riches, and secondly, the inadmissibility of interference into the internal affairs of a state.

In line with the discussion of the legal aspects of the use of these types of applications satellites, in the Western legal literature recently two theoretical concepts have appeared on the role of state sovereignty in international space law. Conditionally let us term them the "American" and the "French," although, undoubtedly, not all American and French legal experts adhere to these views.

The American notion proceeds from a denial of the applicability of the principle of state sovereignty to any types of space activity. The French viewpoint is based on the assertion that the principle of state sovereignty is inapplicable to space research, but is fully valid in terms of the use of space.

Let us immediately stipulate that we do not intend to put both these views on the same level. In actuality, while the American theory is aimed at establishing the freedom of any space activity over foreign territories, the French pursues the directly opposite aim of establishing the necessity of respect for state sovereignty in the use of applications satellites. At the same time a serious shortcoming of the French theory is the provision that international space law in its first stage supposedly rejected the concept of state sovereignty.

In an article devoted to the legal problems of studying earth resources from space, the American legal expert G. Robinson mentions sovereignty as an "illusory dogma" of international law, and urges a revision of the theory of sovereignty in light of the most recent technical achievements. He supports the statements that "the possibilities of remote sensing from manned and automatic satellites have neutralized the effectiveness of sovereignty...and made it obsolete."³

Other American authors have developed the notion that since the current agreements in the area of space law do not impose concrete limitations on the various types of the use of space, there is no basis to incorporate such limitations in space law in the future. Proceeding from this position, official U.S. representatives in the various UN bodies have impeded in every possible way the elaboration of legal documents which would regulate the specific types of space use.

Such views have mingled with appeals to reject the principle of state sovereignty; these appeals have been particularly vociferous after the appearance of the first satellites. "Sovereignty is neither necessary nor sufficient for solving problems created by the space age," wrote the

special advisor to the Commission on the Questions of Science and Aeronautics of the House of Representatives of the U.S. Congress, S. Beresford, in 1959.⁴ "...The concept of sovereignty could in practical terms be taken out of the dictionary of both air and space law," echoed the Canadian legal expert A. Binet.⁵ At that time proposals were also voiced to set up supernational bodies for controlling all space activities, as well as to transfer such control functions to the United Nations or a specially established international space agency.

On a broader level, the ideas of the rejection of state sovereignty have long been propagandized by the supporters of the theory of structural functionalism which is widespread in the United States; one of the prominent representatives of this theory is E. Haas, professor at the University of California.⁶

The true picture of the development of international space law repudiates the theoretical constructs on the inapplicability of the principle of the respect of state sovereignty in this area of international law.

Sovereign states and international intergovernmental organizations which carry out activities in space are the principals of international space law. Having rejected the extension of territorial sovereignty to space, including the moon and other celestial bodies, space law at the same time is based on a respect for state sovereignty in carrying out space activity.

Sovereign states are the participants to all multilateral international agreements in the area of space law. The principle of sovereign equality among states, in particular, is reflected in the universal nature of these agreements and in the absence of a binding court procedure for their interpretation and for solving international disputes between the participants of the agreements.

If we turn to the specific agreements, we will see that the 1967 Space Treaty, having prohibited national annexation of space and its component parts by proclaiming sovereignty over them, by use, occupation or any other means (Article II), and having declared space and its component parts open for research and use by all states (Article I), at the same time established the duty of states to carry out their activities in space research and use in accord with international law, including the UN Charter (Article III). The UN Charter is based upon principles of sovereign equality and noninterference into the internal affairs of states (Article II, Points 1 and 7 of the UN Charter).

In accord with the principle of respect for state sovereignty, the Space Treaty has imposed a whole series of limitations on the freedom of space activity. In addition to the already mentioned provision on the extension of the common principles and provisions of international law to space activities, one must mention the prohibition on any discrimination against states whatsoever (Article I), the necessity of proper consideration of

the corresponding interests of all other states (Article IX), the liability of states for all national activities in space, including the activities of nongovernmental legal entities (Article VI), and other restrictions. The treaty directly prohibits certain types of the military application of space (Article IV). In it attention is drawn to the applicability of the resolution of the UN General Assembly condemning the propagandizing of war to space.

The maintaining of jurisdiction and control over space objects and crews by the states while they are in space (Article VIII) is also one of the manifestations of sovereign rights. The 1968 Rescue Agreement regulates the relationships between states also with strict consideration of the principle of sovereignty. Even operations involving the rescuing of cosmonauts who have made an emergency landing cannot be carried out on foreign territory without the agreement of the state possessing this territory, and in any instance should be carried out under its leadership and control (Article II).

The 1972 Convention on Liability for Damage Caused by Space Objects regulates the material relationships between states and not between physical and legal entities, that is, it does this from the positions of state sovereignty and the sovereign equality of states. Such an approach is also characteristic for the Convention Governing the Registration of Objects Launched into Space.

It must be pointed out that certain American authors have also drawn attention to the designated circumstances, although as a whole American doctrine is characterized by a negative approach to the given problem. "At the same time that a general opinion exists, particularly among nonspecialists," wrote S. Gorove, "that sovereignty has been completely abolished in terms of space, it is essential to emphasize that the Space Treaty bans only 'national annexation' by the proclamation of sovereignty, but not the realization of all forms of sovereignty, sovereign rights or jurisdiction."⁷

Thus, the assertions that space law has developed under the badge of denying state sovereignty or without consideration of this principle clearly do not conform to reality or to the actual state of affairs. Equally inadmissible is to put the principle of respect of state sovereignty in opposition to the principle of the freedom of space, when it is a question of space activities which directly involve foreign territories. The freedom of space cannot serve as grounds for violating the sovereign rights of states on the earth.

The French notion of the role of the principle of sovereignty in international space law has been stated in a number of works written by legal experts collaborating in a work group on space law under the National Center for Scientific Research of France. This group was set up in 1963 upon the initiative of Prof Suzanne Bastide, and brings together university instructors, specialists from the National Center for Space Research and the National Center for Scientific Research, as well as representatives of the French Ministry of Foreign Affairs.

The group has prepared a series of special studies, and periodically publishes an information bulletin entitled LE DROIT DE L'ESPACE [Space law].⁸ The group has been repeatedly instructed to work out the official French position in the United Nations on individual questions of international space law.

The designated view has been stated most extensively in an article published in 1973 in the Journal RECHERCHE SPATIALE by the prominent French international legal expert C. A. Colliard who headed the space law working group.⁹

From the standpoint of legal regulation, C. A. Colliard draws a sharp distinction between research and use of space. Initially, in his opinion, international space law developed as law applied to research in the particular space domain. Although this spatial domain itself was not clearly defined, since the boundary between air space and outer space was not established, the system of law relating to it had an autonomous and "revolutionary" character, since it "abandoned the classical concepts of sovereignty and ownership."¹⁰

Activities in the area of the use of space pursuing not space but rather terrestrial aims, in the opinion of C. A. Colliard, lead to a situation where autonomous space law gives way to "terrestrial" international law, where the concepts of sovereignty and sovereign equality are dominant. According to this theory, the "revolutionary and autonomous" space law regulates only activities related to space research, but as for the use of space, it should be carried out in accord with the provisions not of space law, but rather "classic" international law.¹¹

A number of the provisions in the given viewpoint cannot help but cause dispute. In the first place, current international space law encompasses activities related both to research as well as to the use of space. In the 1967 Space Treaty and in other general multilateral agreements which lay down the bases of space law and order, the words "research and use" are almost always employed together. The provisions of international space law are extended to all types of space activity. However the broad scope of practical activities in space during recent years, as well as the circumstance that in a number of instances these activities may involve foreign territories have necessitated the further progressive development of international space law, in particular by working out special legal conditions for certain specific types of applications satellites.

Secondly, international space law has never rejected the concepts of sovereignty and ownership. Being one of the sectors of international public law, international space law accepts its general principles and provisions, including the principles of sovereignty and the sovereign equality of states. As was shown above, international space law, in introducing into international law the new principle of the freedom of space and the nonextension of territorial supremacy to space, regulates the

relationships between states in the area of their space activities on a basis of strict respect for the principle of state sovereignty.

As for the concept of ownership, it also is not alien to international space law. Having prohibited the annexation of space, including the moon and other celestial bodies, the Space Treaty defined that the rights of ownership to space objects launched into space, including objects delivered to or built on a celestial body, and their component parts remain unimpaired while they are in space or on a celestial body, or upon return to the earth (Article VIII).

Finally, also debatable is the view of C. A. Colliard that in the use of space, international space law "gives way" to international public law. The extension of international law to all types of space activity is specially stipulated by the Space Treaty (Article III). Moreover, the elaboration of new international documents which regulate the specific types of the practical application of earth satellites is carried out precisely within the limits of international space law, the current provisions of which encompass both the research and use of space. Consequently, it would be more correct to speak not of the halting of the action of space law, but rather that in line with the specific nature of the practical use of space, certain principles of general international law (primarily the principles of sovereignty and the sovereign equality of states) which simultaneously are principles of international space law, assume greater force as applied to the given types of activity.

However, regardless of all the shortcomings and the dubious provisions of the designated viewpoint, it is essential to emphasize its great positive significance which consists in the fact that, as was already pointed out above, it focuses attention on the role of the principles of sovereignty and the sovereign equality of states in carrying out practical space activities. This concept proceeds from the limited nature of the principle of the freedom of space and the inadmissibility of putting it in opposition to the supremacy of states on their territory.

Over the centuries, in the theory and practice of international law, the principle has been established of the unchallenged power of the state over its territory, including the land, the waters and the air. The supremacy inherent to a state on its territory and independence in international relations are the most important component elements of state sovereignty in its political and legal understanding. Without the principle of state sovereignty, modern international law is inconceivable.¹² A discussion of the question of whether or not state sovereignty is violated with the passage of satellites over the territories of foreign countries at one time was the starting point in the birth of international space law.

A predominant majority of authors has been unanimous in the fact that the flight of satellites above the territories of foreign states does not violate the control of these states over their air space, and access to space

for the purpose of its peaceful exploration and development should be open on equal bases to all nations of the world without any discrimination.

The ubiquitous and rapid recognition of this principle was large aided by the circumstance that the space age began in the period of carrying out an unprecedentedly broad program of international scientific cooperation, the International Geophysical Year (IGY). The Special Committee to Carry Out the IGY even in 1954 approved a resolution which noted the great scientific interest of setting up experiments using research rockets and satellites. Although the IGY Program officially was not of an international character, it was carried out with the active support and approval of governments.

But, of course, an even greater role in establishing the principle of the freedom of space was played by a recognition of the historic significance of man's entry into space and those possibilities which were opened up in this regard for scientific and technical progress and for strengthening international cooperation.

The principle of the freedom of space immediately became established in international relations at first with the tacit consent of the states and later in the form of resolutions of the UN General Assembly, and, finally, in a multilateral international treaty.

Because of this, of course, the claims advanced recently by certain nations to extend their sovereignty to certain parts of space itself cannot be considered as valid.¹³ The ban on the national annexation of any part of space is presently a generally recognized provision of international law.

At the same time, Soviet legal science from the very outset has emphasized the circumstance that the nonextension of the sovereign power of a state to space as such does not obviate the action in space of the general principles of international law which are binding for relationships between states, regardless of whether their activities are carried out in the open sea, in air space or outer space.¹⁴

The special rules established by states in terms of the conditions of each of these spaces do not obviate but merely clarify, develop and concretize such general principles of international law as the observance of territorial integrity and state sovereignty, noninterference into internal affairs, the prohibiting of aggression and the propagandizing of war, and so forth. These provisions now are affirmed by the conventional provisions of international space law. As was rightly noted by A. P. Movchan, "The rise and development of space law have convincingly shown that scientific and technical progress do not entail a revision or abrogation of the basic principles of modern international law which have withstood the test of time and represent a generally recognized basis for fruitful collaboration among states in the most diverse spheres of international relations, including the areas engendered by the scientific and technical revolution."¹⁵

Thus, since the birth of space law, the freedom to explore and use space has been interpreted within the relations between sovereign and equal states which carry out their activities in space in full accord to the basic principles of international law. The freedom of space has never been understood as a totally unrestricted freedom for any activity in space.

In analyzing the content of the principle of the freedom of space, the French specialist Simon Courteix has written: "The 1967 Space Treaty in the first article proclaims the principle of the freedom of the research and use of space. This freedom in essence consists in equal access for all states to space activities, and in the nonannexation in any manner of any part of space, the moon or other celestial bodies. However it can be carried out only in observing definite conditions and restrictions established by the treaty itself."¹⁶

The Czechoslovak professor J. Busak has correctly drawn attention to the fact that "in accord with the Space Treaty the principle of the free use of space in no way is an exception to the binding principles of current international law applied in relations between states."¹⁷ "And precisely for these reasons," writes J. Busak, "the activities of the applications satellites should be regulated by the generally recognized principles of international law, and in particular, by the principles of the respect for the sovereign rights of states..."¹⁸ The treaty provisions of international space law do not contain definitions for the concepts of "research and use" of space. In the texts of the agreements, these concepts, as has already been pointed out, are used together. Although the conditions for the use of space is more restricted in comparison with the conditions of research (for example, certain types of military use are directly prohibited), international space law does not establish a separate general legal regulation for the use of space in contrast to the legal regulation of space research.

By the use of space, in the broad sense, one must understand all activities in space which pursue not only the aims of broadening scientific knowledge about space itself. In other words, the term "use of space" includes both the concept of the use of space itself and its component parts, for example, by exploiting the resources of celestial bodies, as well as the concept of the use of space equipment for solving various problems on earth.

From the viewpoint of legal regulation, of particular significance are those types of space use the consequences of which are felt on the earth. All types of the presently used applications satellites are used to satisfy terrestrial needs. However the degree of their impact on terrestrial affairs and the consequences of their use are far from the same.

The basic types of practical satellite use can be conditionally ranked in the following sequence in terms of the degree of their possible impact on the exercising of sovereign rights by states on the earth: space communications employing ground receiving and transmitting stations, space navigation,

space meteorology, remote sensing of the earth, and direct television broadcasting.

As for the first two types of satellite use, the problem of state sovereignty arises chiefly in terms of ensuring sovereign equality for the states and the prohibiting of any discrimination whatsoever among the states in setting up and operating the corresponding international systems and organizations.

Uncontrolled activities via any type of communications and navigation satellites on the territory of states are impossible, since their use requires the placement of complicated receiving and transmitting stations on the ground. This is inconceivable without the knowledge and approval of the corresponding states. The systems of such communications and navigation satellites do not represent a threat to realizing the territorial supremacy of states.

The use of satellites for meteorological purposes up to now has also not created any specific international legal problems. Such satellites are widely used on a national basis and fit easily into the international meteorological programs. However, even now the necessity has arisen of preventing the danger of the use of space as well as other scientific and technical devices for controlling the natural environment and climate for military and other purposes not compatible with the interests of ensuring international security, well being and the health of people. Moreover, any activity involving a change in weather and climatic conditions over vast areas can involve the interests of a number of states and demand the corresponding legal regulation.

The use of satellites to study earth resources (remote earth sensing satellites) requires a special international legal regulation which prohibits the use of the obtained information on the resources of foreign states to the detriment of their sovereign rights.

Direct television broadcasting via satellites to home receivers represents a type of space activity the purpose of which is to produce a definite effect on earth. Obviously if such an effect is aimed at a foreign territory, the agreement of the appropriate state must be obtained. Otherwise this activity must be viewed as interference into the internal affairs of the state and as a flagrant violation of its sovereignty.

The given considerations make it possible to conclude that it is scarcely possible to elaborate a special general legal framework for all types of use of space objects for practical purposes. Certain types of satellite use generally do not require the elaboration of special legal conditions which differ from those which have already been defined by current space law in terms of any activity related to the research and use of space. The particular features of the use of satellites to study earth resources and direct television broadcasting, in involving their effect on the exercising of sovereign rights by states, first of all necessitate a special legal regulation for these types of space activity.

The legality of each specific type of the use of space devices for carrying out practical missions on the earth and, respectively, the degree of freedom for the use of space (with the absence of special legal conditions for the given type) should be determined depending upon whether or not these activities conform to the generally recognized principles of international law (including space law), in incorporating the principles of respect for state sovereignty and the sovereign equality of states.

FOOTNOTES

1. The concepts of applied, practical and national economic use of space are used as synonyms.
2. A. W. Stoeber, "Domaine d'application des satellites: données scientifiques et techniques et problèmes posés," Paris, 1972, p 16.
3. G. S. Robinson, "For a Worldwide Utilization and Dissemination of Data Acquired Through Remote Sensing," "Legal Implications of Remote Sensing from Outer Space," Sijthoff--Leyden, 1976, pp 114, 117.
4. S. M. Beresford, "The Future of National Sovereignty," "Second Colloq. Law Outer Space, London, 1959," Vienna, 1960, p 8.
5. H. Binet, "Toward Solving the Space Sovereignty Problem," "Second Colloq. Law Outer Space, London, 1959," p 15.
6. For the theory of structural functionalism, see: G. I. Morozov, "Mezhdunarodnyye Organizatsii" [International Organizations], Moscow, Mysl', 1974, pp 71-84.
7. S. Gorove, "Developments in Space Law: An Impressive Record for the Hall of Fame," Almagordo, 1976, p 8.
8. LE DROIT DE L'ESPACE. BULLETIN D'ANALYSES ET D'INFORMATIONS, Paris, 1967-1974.
9. C. A. Colliard, "Le droit de l'Espace et les satellites d'applications," LA RECHERCHE SPATIALE, Vol XII, No 2, 1973, pp 1-5.
10. Ibid., pp 1-5.
11. Ibid.
12. G. I. Tunkin, "Teoriya Mezhdunarodnogo Prava," Moscow, Mezhdunarodnyye Otnosheniya, 1970, p 252.
13. Such claims were advanced in 1976 by a group of equatorial nations over the sectors of a geostationary orbit.

14. For the first time in Soviet literature this viewpoint was stated by the founder of the Soviet science of space law, Ye. O. Korovin (Ye. O. Korovin, "On the International Conditions of Space," MEZHDUNARODNAYA ZHIZN', No 1, 1959, p 74).
15. A. P. Movchan, "Problemy Kodifikatsii i Progressivnogo Razvitiya Mezhdunarodnogo Prava," Doctoral Dissertation Resume, Moscow, 1974, p 24.
16. "Documents d'études. Droit international public. La documentation française," Paris, 1973, No 3.04, p 7.
17. J. Busak, "Some Reflections on Applications Satellites," TELECOMMUN. J., Vol 43, 1976, p 356.
18. Ibid.

CHAPTER 2: INTERNATIONAL SPACE COMMUNICATIONS SYSTEMS: LEGAL PRINCIPLES OF THEIR CREATION AND OPERATION

A number of factors explains the particular interest in the political and legal principles for setting up the international space communications systems. Communications via earth satellites is one of the earliest and most developed areas of the practical application of space technology. Certain other practical areas (navigation, direct television broadcasting) from the viewpoint of the equipment can be viewed as varieties of space communications. In the Western doctrine of international space law and in the practical activities of certain capitalist states, these circumstances gave rise to a tendency to use international legal principles and methods of work in one of the existing space communications organizations, Intelsat, as the precedent for future legal regulation in other applied areas of space activities.¹

At the same time precisely differences over the political and legal principles have led to the creation of two parallel international space communications organizations and systems (Intersputnik and Intelsat), although the advantages of one worldwide communications system are obvious from the technical and economic standpoint. Sharp differences over political, economic and legal questions related to the commercial use of communications satellites also exist within the capitalist world. In the diplomatic sphere these have been clearly apparent at the conference to work out the so-called final agreements on Intelsat in 1969-1971. In the practical area this has been expressed by the creation of a Western European regional system that is independent of Intelsat.

The present chapter is devoted to an analysis and comparison of the multi-lateral agreements underlying the two international satellite communications organizations and systems and the prospects for cooperation between states in this area.

1. The International Intersputnik Space Communications System and Organization

The agreement to set up the Intersputnik international space communications system and organization was signed in Moscow on 15 November 1971, and came

into force on 12 July 1972.² Intersputnik was to meet the needs of the nations served by it for telephone and telegraph channels, color and black-and-white television and other types of data transmission via earth satellites.

The proposal to set up the Intersputnik international system and organization was made by the nine socialist countries in August 1969 in Vienna during the UN Conference on the Exploration and Use of Space for Peaceful Purposes. The initial draft of the agreement was published as an UN document. In subsequent years, the technical, economic and legal questions of setting up Intersputnik were discussed at sessions of the permanent working group on space communications which exists within the multilateral cooperation of the socialist countries under the Interkosmos Program. As a result of these discussions, certain amendments and clarifications were made in the initial draft of the agreement, but these did not alter its substance.

Intersputnik was established as an international intergovernmental organization. At present its members are the governments of Bulgaria, Hungary, the GDR, Cuba, Mongolia, Poland, Romania, the CSSR and USSR. Membership in the organization is open to all states which share its views and principles and assume the obligations stemming from the agreement.

Intersputnik is concerned with the questions of the designing, development, operation and augmentation of the international satellite communications system. This system consists of two basic components: the space component which includes the satellites and orbiting satellite control equipment, and the ground component which includes the stations which provide two-way communications via the satellites. The space complex can belong to the organization with ownership rights or by leasing rights; the ground station is the property of the states or the operating organizations.

The general funds of the organization, as a rule, can be spent only on the space complex; the ground stations are set up by funds from the corresponding states or operating organizations (state or private).

Article 5 of the Agreement provides for the gradual creation of the system. The first stage encompasses the carrying out of experimental work by the members of the organization at their own ground stations using the communications channels which are provided gratis by the USSR on its communications satellites. The second stage presupposes the use of the communications channels on the satellites under leasing arrangements. The third stage is the commercial operation of the communications system.

The difference between the second and third stages consists in the fact that in the second stage, the members of the organization may consider it economically more advantageous to lease only a portion of the communications channels on the already existing satellites of the organization's members and not to lease or create a space complex as a whole at their own expense.⁴

The dates for moving on to the third stage at which the space complex as a whole will belong to Intersputnik under ownership or leasing rights are to be set by the members of the organization depending upon economic advisability.

The launching of the communications satellites which are the property of the organization and their control in orbit are carried out on the basis of special agreements by the Intersputnik members.

The gradual development of the system also determines the procedure for forming the organization's money (Article 15). Initially only a special annual budget is to be formed, and from this expenses are to be covered to pay for the directorate and other administrative measures.⁵ But when the needs of the organization are established for leasing or creating its own space complex, a charter capital will be formed for the organization, and its size will be set by a special protocol. The proportional participation of the nations informing the charter capital is proportional to the degree of their use of the communications channels. The profit obtained from operating the communications system would be distributed between the organization's members proportionately to their contributions.

The basic bodies of Intersputnik are its council and directorate. In addition there is provision to set up an auditing commission for inspecting financial activities, as well as other auxiliary bodies, at the discretion of the council.

The council is the main directing body. It includes one representative from all members of the organization, and each has one vote. The principle of "one nation--one vote" ensures the greatest democratic management of the organization and conforms fully to the international nature of its activities.⁶ All fundamental questions covered by the Agreement are considered in the competence of the council, the sessions of which are held at least once a year.

In accord with Point 7 of Article 12 of the Agreement, the council should endeavor that its decisions be approved unanimously. In the absence of unanimity the council's decisions can be approved when at least two-thirds of all the members have voted for them. However, in the latter instance the council's decisions are not binding for those members who have not voted for their approval and have stated their exception in a written form. Subsequently these members may adhere to the approved decisions.

The council sessions review and solve a broad range of technical, administrative, financial and legal questions related to the activities of the organization.⁷

The directorate is the permanent executive and administrative body of Intersputnik with headquarters in Moscow. It consists of the general director elected by the council for a term of 4 years with the right of

reelection, a deputy general director who is elected for the same term but without the right of reelection, and the necessary staff the selection of which is made considering professional competence and a just geographic representation. The directorate is staffed by citizens from the states which are members of the organization. The general director and his deputy cannot be citizens of the same state.

The functions of the general director, as the chief administrative official of the organization, are clearly outlined in Article 13 of the Agreement, where it is specially emphasized that in all his actions the general director is responsible to the council, and the limits of his powers are set by the Agreement and by the decisions of the council.

The directorate is an international body with clearly expressed executive functions. It is completely accountable in its activities to the council as the main leading body of Intersputnik.⁸ For this reason the assertion by the American legal expert S. Doyle that the powers of decision taking and management of the organization in Intersputnik are concentrated in the directorate is totally inaccurate.⁹

As a legal entity (Article 8 of the Agreement), the organization is empowered to conclude treaties, to acquire, lease and dispose of property, and undertake pleadings. In accord with agreements with the competent bodies of the states on whose territory it carries out its activities, the organization on the territory of these states has a formal legal capacity needed for achieving its goals and carrying out its functions.¹⁰ International and other agreements on behalf of the organization are concluded by the general director upon instructions of the council within the powers established by the council. Thus, Intersputnik should be viewed as a principal of international law and the national law of the states on whose territory it carries out its activities.

In operating the space complex, the organization allocates communications channels between its members, proceeding from their requests. The plan for allocating the communications channels is approved by the council. The organization can lease the communications channels which exceed the overall needs of all its members to other users. The procedure and conditions for using the communications channels by other users are also to be defined by the council. Here the Agreement notes that the rates for using communications channels should be on the level of the world average. This means that the use of the Intersputnik system is open not only to the members of the organization, but also to other both national as well as international users. Certainly an indispensable condition for using the system is the compatibility of the technical characteristics of the ground stations to the requirements of the organization.

The Agreement does not restrict the right of its members to participate in the development or operation of other national or international space communications systems, in granting them complete freedom in this area. Also

it does not exclude the possibility of cooperation between the Intersputnik system and other communications systems.

The text of the Agreement (Article 7) notes that the organization coordinates its activities with the ITU and also cooperates with other organizations when their activities are related to the use of communications satellites both in technical terms and on the questions of international regulation.¹¹ The special mention of the ITU as an organization with which Intersputnik coordinates in its activities is explained by the important role of this organization in regulating a series of technical space communications questions, including the use of the radio spectrum.

The actual work of setting up the Intersputnik system started even before the Agreement on establishing the organization and forming its basic bodies had come into force. The above-mentioned permanent working group on space communications within the Interkosmos Program was concerned with the planning and coordinating of this work. And at present Intersputnik maintains the closest ties with this working group.

The preliminary technical plans provided two versions for building the communications systems. One of them was designed for that group of nations which have presently signed the Agreement, and the other encompasses a significantly larger area of the earth's surface and can be employed with an increase in the number of states which have joined Intersputnik. These versions differ in the number of satellites, the power of the retransmitters on the satellites, and certain characteristics of the ground stations.¹²

By the beginning of 1977, ground stations of the Intersputnik system were operating, in addition to the USSR, on the territory of the GDR, Cuba, Mongolia, Poland and the CSSR. Ground stations were also being built in the other member states. Scientific research and experimental design work are being carried out successfully, and the results of this are being used in developing the space complex and the ground stations comprising the system.

The international legal aspect of the organization's activities has also been further developed. The necessity of elaborating and approving certain additional legal documents was directly stipulated in the Intersputnik Agreement. Article 12 mentions the Regulation Governing the Personnel of the Directorate which should be approved by the council, and the procedural rules for the work of the council; Article 9 describes the agreements with the competent bodies of the states on the territory of which the organization is to carry out its activity; Article 15 deals with special protocols on financial questions.¹³ Subsequently the need may arise for a special regulation of patent rights and the methods of resolving international disputes.

Obviously there must be a clarification in Article 10 of the Agreement in order to bring it into agreement with the Convention Governing International Liability for Damage Caused by Space Objects. Article 10 establishes that

the organization bears financial liability under its obligations within the limits of the property belonging to it, but is not responsible for the obligations of the organization's members, as the latter are not responsible for the organization's obligations.

At the same time the Convention Governing Responsibility for Damage has set as a *vis opone* provision the principle of solidary liability for damage caused as a result of joint space activity, without limiting this liability to any definite amount. And the solidary liability is born both by the intergovernmental organization and by its members (Articles V and XXII of the Convention). The designated contradiction has been caused obviously by the fact that the Convention on Liability for Damage was approved after the Intersputnik Agreement.¹⁴

In describing the international legal principles on which Intersputnik is based, P. I. Lukin has noted completely correctly that this is "an organization without privileged and unequal partners, in which each of the participating states has been granted opportunities under equal conditions to use the newest achievements of science and technology."¹⁵

The Intersputnik international space communications system and organization, as is stated in its constituent Agreement, is to be set up on the basis of the principles of respect for the sovereignty and independence of states, equality of rights, noninterference into internal affairs, as well as mutual help and mutual benefit. Intersputnik should help in strengthening and developing the all-round economic, scientific-technical, cultural and other relations among its members.

2. The Intelsat International Space Communications System and Organization

On 20 August 1964, in Washington, two interrelated agreements were opened for signing dealing with the setting up of a commercial satellite communications system: one agreement (the intergovernmental one) set up the organizational structure and basic principles for creating the future system, and the second (signed by the representatives of the communications administrations and private companies) took up the financial, technical and operational aspects of the system.¹⁶ These agreements marked the beginning to setting up under U.S. aegis the Intelsat international communications satellite consortium, and subsequently this has been turned into the largest commercial space organization in the capitalist world.¹⁷

Benefiting from its monopolistic position in the area of communications satellites and launch vehicles among the capitalist nations, in 1964 the United States relatively easily was able to impose on its partners in the Washington agreements unequal conditions which reinforced the dominant role of the American private Comsat Corporation in the international system. An important concession by the United States which the Western European nations succeeded in gaining was merely that the agreements were of a provisional nature and would be revised every 5 years.

When the Conference of Delegates to Work Out the Final Intelsat Agreements was convened in Washington in February 1969, the situation was already different. England, France, West Germany and the other Western European nations had begun to be actively involved in space research. The industrial companies of these nations were constantly demanding a more equal share in the allocation of orders for the Intelsat Programs. In various regions of the world, plans had arisen and were being implemented to set up national and regional satellite communications systems. The Third World nations were also heard now and by this time they were already a majority of the Intelsat members. Finally, in 1968, the socialist countries had come up with their own draft agreement on an international space communications system. The democratic principles of this draft attracted universal attention and significantly impeded the United States in being able to dictate its conditions for the future space communications organization. As a result the United States found it significantly more difficult to conduct the talks from a position of strength than previously.

The attempt of the United States to overlook all the listed circumstances led to a situation where the debates which lasted a month at the 1969 Washington Conference did not lead to the working out of a text of the final agreements. It took another two rounds of this conference before a compromise text of the new agreements appeared.¹⁸

The new Intelsat agreements which were opened for signature on 20 August 1971 came into force on 12 February 1973.¹⁹ Like the 1964 temporary agreements, these consist of two basic documents: the intergovernmental agreement and the operational agreement. The second was signed by governments or under governmental authorization by the communications administrations or private companies. In a certain sense the structure of Intelsat established by the new agreements also is of a temporary nature. This applies, in particular, to the question of the role of Comsat the powers of which as the manager of the system have been extended for another 6 years.

At the 1969-1971 Washington Conference, the Intelsat members succeeded in gaining a whole series of important concessions from the United States. At the same time, these concessions did not lead to fundamental changes in the principles on which the given system is based. Fundamental changes did not occur in Intelsat, and the United States kept its dominant position in it.²⁰

Let us examine the most characteristic features in the structure and powers of the leading bodies, as well as the operating methods of Intelsat as defined by the new agreements.²¹

In 1964, Intelsat was set up not as an international organization in the true sense of this word, but rather as an international consortium or joint venture.²² The absence of an independent legal status has led to a situation where Intelsat could not act on its own behalf and for carrying out legal operations was required to seek the aid of Comsat. As a result, a

situation developed whereby the sovereign states that were members of Intelsat in a number of instances were dependent upon a private corporation.

Thus, in concluding contracts for the manufacturing and delivering of equipment for the communications satellites as well as in carrying out other transactions, Intelsat operated through Comsat. In the event of the occurrence of any disputes on the rights and obligations stemming from such contracts, the Intelsat members were also obliged to turn to Comsat. Access by the Intelsat members to patent, inventions and technical information obtained by the subcontractors in the course of working on the Intelsat projects, and consequently to the money for all its members was also carried out only through Comsat. Without being a legal entity, Intelsat could not possess property in its own right.

The absence of an international legal personality and the status of a legal entity for Intelsat led to other shortcomings in its activities, and these were listed in detail in a report of a special working group which reviewed this question at the Washington conference.²³ Because of this the question of whether Intelsat would be turned into an international organization caused sharp debate in working out the final agreements.

Behind this seemingly legal technical dispute was hidden the U.S. desire to keep Intelsat as a consortium which was completely dependent upon a private American corporation. For this reason the United States continued to hold out on the given question, even being left in complete isolation. However ultimately the United States was forced to give way, and at present Intelsat is officially named not a consortium and not a joint venture but rather an international communications satellite organization. In accord with Article IV of the intergovernmental agreement, Intelsat has been given the rights of a legal entity. By this article it is granted the right to conclude agreements with states and international organizations.

The founders of Intelsat from the very outset laid claim to a worldwide ("global") coverage for the space communications system being set up by them. The preamble of the 1964 Intergovernmental Intelsat Agreement states a desire to set up a "unified global commercial communications system with the aid of satellites." The preamble goes on to mention that "communications by satellites should be organized in such a manner as to allow all states (emphasis ours, author) to have access to this global system...." And there were also words to the effect that the most modern technical devices should be used "for the good of all nations of the world." These or analogous phrases were kept in the preamble of the 1971 Intergovernmental Agreement.

By the logic of things, an international communications system which sets such goals for itself should have a universal nature, that is, be open for membership by all nations of the world. However, the 1964 Agreement included articles which ruled out universal membership in Intelsat and were in sharp contradiction to the proclaimed goals. Thus, Article VII envisaged

that the Agreement was open for signing and adherence only for members of the ITU. In this manner the doors were closed for participating in a system which should assist in intercourse between all states of the world for a whole group of states which for various reasons, often not depending upon them, were not ITU members. This clearly discriminatory provision was aimed against a number of the socialist countries.

Regardless of the fact that many states were in favor of universal membership in the future organization at the Washington Conference,²⁴ the United States was able to maintain the existing restrictive rule in the final agreements (the preamble and Article XIX(a)(ii) of the intergovernmental agreement).

Although the states which are not members of Intelsat now have been given the right of access to the use of the system through their own ground stations or stations belonging to other states, this concession does not eliminate the question that the membership procedure in Intelsat flagrantly violates the principle of sovereign equality among states. As was rightly noted at one of the international colloquiums on space law by the Argentine legal expert O. Brital, "strict observance of the provisions of the 1967 Space Treaty demands that the global satellite communications system be open for all states on equal footing."²⁵

In the course of the three rounds of the Washington Conference, the sharpest debate among the Intelsat members was over the questions of the structure and powers of the managing bodies as well as the rights of the Intelsat members to set up their own independent space communications systems.

According to the 1964 agreements, the activities of Intelsat were to be managed by a temporary committee of 18 representatives, but by 1969 69 states were members of Intelsat. Consequently, over 50 states which had invested their money in setting up the system were in practical terms completely outside its management. The voting procedure on the temporary committee was organized under the principle of how much capital had been invested. Under this system of "capital voting," the U.S. representative on the temporary committee initially had 61 percent of the votes, and then with an increase in the number of Intelsat members, 53 percent. However, actual power in the consortium belonged not even to the temporary committee, but rather the American Comsat Communications Satellite Corporation which acted simultaneously in three persons: the manager of Intelsat, the U.S. representative on the temporary committee, and a private corporation working to earn a profit. Precisely Comsat settled all the major questions related to the designing, construction and operation of the international system.

In reviewing the temporary agreements, a predominant majority of states was in favor in the new Intelsat structure of setting up a management body or bodies in which all members of the organization would be represented, as well as internationalizing the Intelsat executive body.

During the entire conference, the United States held the most rigid and uncompromising position on the question of the status of Comsat, endeavoring to keep its guiding position in the international communications system no matter what the cost. The position of the American delegation at the conference to a decisive degree was determined by the interests of this private corporation and its desire to hold on to its monopolistic position. In referring to a desire to ensure efficiency and economy in the operation of Intelsat, the U.S. delegation rejected the idea of internationalization and proposed that the functions of the managing body be maintained by Comsat for an indefinite time. As one of the American journals wrote at that time, Comsat did not wish to give even an inch in its firm intention to remain at the helm of the administrative leadership as before."²⁶

After long debates, the United States agreed to a compromise "package" of Japanese-Australian proposals, in accord with which a four-tiered structure was to be set up in Intelsat: an assembly of parties (governmental representatives), an assembly of participants (representatives of the communications administrations or private communications companies empowered by the governments), a board (with a restricted number of representatives), and an executive body.²⁷ Precisely this structure later on was reinforced in the 1971 intergovernmental agreement.

The assembly of parties presently is the superior body of Intelsat (Article VII). The sessions of the assembly are held once every 2 years. Each Intelsat member has one vote in the assembly. Decisions on substantive questions are taken by a two-thirds majority, and on procedural questions, by a simple majority. The agreement states that the assembly "will examine those aspects of Intelsat which are of interest primarily for the parties as sovereign states" (Article VIIc). However, in fact the assembly carries out only consultative functions. It can approve only recommendations on questions relating to the overall policy of the organization.²⁸

Even more limited are the powers of the assembly of participants which at its annual sessions is merely concerned with the discussion and presentation of recommendations on technical and financial questions.

Real power is concentrated in the board where, in the expression of the French legal expert Lafferanderie, "the principle of weighted voting has replaced the rule of legal equality."²⁹ The number of board members should not exceed 22. As on the temporary committee, the representation of the nations on the board and the number of votes which they possess there depend upon their financial contribution to Intelsat. Without taking up in detail the involved system of determining the group of nations which sit on the board, we would merely note that the maximum possible number of votes by one member has been reduced to 40 percent of the total number of votes of all board members. The voting procedure established by the agreement excludes the possibility of blocking the board's decisions by the votes of less than four states. Nevertheless, the United States, as the largest investor in Intelsat, without possessing the right of a veto, can relatively easily impose any advantageous decision for the United States on Intelsat.

The board is responsible for the elaboration, creation, operation and development of the "space segment" of Intelsat, that is, the space portion of the system which includes the satellites and the ground control facilities. It approves the plans and programs of Intelsat activities, the procedure for allocating orders in industry, it approves the budget and carries out a number of other important functions. Board meetings are held at least four times a year.

As for the executive body of Intelsat, it should be finally established only 6 years after the new agreements come into force (by 1979). By no later than this date the general director should be appointed by the board and approved by the assembly of parties (Article XI). The general director will be the chief executive officer and the legal representative of Intelsat.³⁰ Up to 1979, the functions of the executive body and manager of the system as before will be kept by the American Comsat Communications Satellite Corporation which thereby extended its dominant position in Intelsat for 6 years. Only certain administrative and financial obligations were to be carried out in the transitional period by the board-appointed general secretary. The latter, however, could not carry out any leading role vis-a-vis Comsat (Article XII).³¹

Since the founding of Intelsat, the Western European partners of the United States have constantly struggled against the attempts of Intelsat, and more accurately the U.S. representative of Comsat in this consortium, to monopolize the right to set up space communications systems. France has shown particular activity on this question, in defending the right of the Intelsat members to set up regional systems within the framework or outside of Intelsat. France has been supported by the other Western European nations which have begun to develop an independent European satellite communications system.

The official U.S. position on this question can be judged from the American draft of the final Intelsat agreement which was submitted in the course of the first round of the Washington Conference. Article VIII of this draft proposed that the members of Intelsat be prohibited, under the threat of exclusion from the organization, in participating in the creation or use of other international space communications systems.³² It is not surprising that this proposal which is in sharp contradiction to the basic principles of international space law as affirmed in the 1967 Space Treaty was disputed by a majority of the Conference participants and was not incorporated in the text of the final agreements.

However the Intelsat members were unable to achieve complete independence in settling the questions of setting up national and international communications systems outside of Intelsat. The intergovernmental agreement, the preamble of which mentions the "unified" global commercial satellite communications system, obviously excludes the possibility for the Intelsat members to form a parallel system or systems with global coverage. As for the regional systems, according to Article XIV of the Intergovernmental Agreement, they can be set up only after a complex procedure of preliminary

consultation with the board and the assembly of parties over the technical compatibility of these systems with the current or planned Intelsat systems and after giving guarantees that the regional systems will not cause "significant economic harm to the worldwide Intelsat system."³³ The establishing of the national systems also requires preliminary consultation with the Intelsat board on technical questions.

The extended dispute between the United States and Western Europe on the conditions for the selling of American rockets to launch the European communications satellites shows what the restrictions established by Article XIV of the Intergovernmental Intelsat Agreement can lead to in practice.

During the years which have passed since its founding, Intelsat has undoubtedly made significant technical and economic advances. More than 90 states are members of this organization, and a majority of them have built ground communications stations which are part of the system on their territories. Since 1969, the Intelsat satellites could provide communications for virtually the entire territory of the world. In the system several generations of communications satellites have been developed, and the number of their telephone channels has risen from 240 to 6,000. The rates for using the communications channels have declined significantly.³⁴

However, behind these successes it must be seen that the Intelsat agreements flagrantly violate the fundamental principle of international law, the sovereign equality of states. Bourgeois legal experts also recognize the unequal nature of these agreements.³⁵ The Intelsat agreements seriously encroach on the sovereign rights of the member states of this organization and reinforce the dominant role of the United States.

In contrast to Intersputnik, where all nations are represented on the managing body, and each nation has one vote, real power in Intelsat had been kept for the body with limited representation of the nations and by the system of weighted voting. While in Intersputnik the executive functions are carried out by an elected international body (the directorate), at Intelsat these questions up to now have been under the control of a private U.S. capitalist enterprise. At the same time that the Intersputnik organization is open for all nations to join, membership in Intelsat has been closed for states which are not in the ITU. Finally, the Intersputnik Agreement does not restrict the rights of its members to participate in other space communications systems. But the members of Intelsat cannot settle these questions independently.

The given differences show why Intelsat has not been able to be turned into a truly universal satellite communications organization, and why development has occurred along the path of forming two parallel international space communications systems and organizations. In this manner it has been impossible to realize the objectively existing opportunities to set up a unified universal space communications organization based upon the principles of the equality of its participants, or principles which would exclude the dictating of terms in this organization by one state or group of states.

The political and legal principles of Intelsat, in spite of the assertions of its apologists, cannot serve as the model for setting up the other international space organizations.

Along with Intersputnik and Intelsat, the world presently has a number of other national and international space communications systems. For many years, the Orbita system has been in operation and developing in the USSR; this system includes around 80 earth stations located on Soviet territory. In 1973, the Canadian national space communications system began operating; in 1974, the first national system on U.S. territory. In 1974, France and West Germany using an American launch vehicle lofted the experimental Symphonia communications satellite. Western Europe is developing and is planning to begin operating its own regional system by the end of the 1970's. In 1976, a national satellite communications system was organized in Indonesia. The plans are known for setting up national space systems in India, Japan, Brazil and other countries.³⁶ In 1976, a group of Arab countries approved a decision to set up their own regional system.

The presence of several international and national space communications systems has posed the question of cooperation in one form or another between them, as well as the interaction and coordinating of their activity. Since neither Intersputnik nor Intelsat excludes access to the system for nonmember states, the simplest form of cooperation would be use of the satellite communications channels of one system by the individual states or by a group of states from the other system. This form of cooperation could also be used between states having their own national systems, or for those instances when satellites belonging to an international organization are used on the one hand, or national satellites, on the other. Such forms of cooperation are already being used in practice both by the USSR and United States and also by other nations. In particular, a special hotline between the United States and the USSR has been set up on these principles, and this circuit passes via the Intelsat satellites and the Molniya Soviet satellites.

Another, more complex form of cooperation which obviously will arise in the future is the direct interaction of the international space systems. This requires special international legal regulation and the coordinating of a number of scientific-technical and economic questions. Here of primary significance will be the questions of the technical compatibility of the parameters in the various systems. Such questions cannot be settled by the dictating of terms or by imposing one's standards on any system, but require coordination and consideration of the interests of the corresponding countries. At present there already is some experience in the interaction of the Intelsat and Intersputnik technical systems.

In creating the various types of space communications systems it is also essential to exclude interference in using the radio frequencies and in placing the satellites in a geostationary orbit.³⁷ Both bilateral and multilateral contacts and agreements as well as the international organizations concerned with the various problems of space communications should

be used for solving the range of questions which will arise in the process of interlinking and coordinating the different space communications systems.

FOOTNOTES

1. See, for example: W. von Kries, "Organizational Aspects of Commercial Satellite Systems," "Proc. XXVII Colloq. Law Outer Space," California, 1975, pp 68-71.
2. VEDOMOSTI VERKHOVNOGO SOVETA SSSR, No 34, 1972, p 317; No 15, 1972, p 118.
3. UN Doc. A/AC. 105/46, 9 August 1968.
4. Since 1976, Intersputnik has been leasing television and telephone channels on the Soviet communications satellites in accord with a special protocol and contract concluded by the Intersputnik Directorate and the USSR Ministry of Communications.
5. The budget is based upon the principles of equal proportional participation of all the members of the organization. The payments for the leasing of channels on the Soviet communications satellites by the organization's members are made through the directorate.
6. G. I. Tunkin, "Teoriya Mezhdunarodnogo Prava," Moscow, Mezhdunarodnyye Otnosheniya, 1970, pp 387-389.
7. The first session of the council was held in 1972 in the USSR, the second in 1973 in Bulgaria, the third in 1974 in Hungary, the fourth in 1975 in the USSR, and the fifth in 1976 in the GDR.
8. The general director of Intersputnik was elected at the second session of the council in 1973.
9. S. Doyle, "An Analysis of the Socialist States' Proposal for Intersputnik: An International Communications Satellite System," VILLANOVA LAW REVIEW, Vol 15, No 1, 1969, p 105.
10. The agreement on the formal legal capacity, the privileges and immunities of the International Intersputnik Space Communications Organization was signed in Berlin on 20 September 1976. In 1976, an agreement was also signed between the government of the USSR and the International Intersputnik Space Communications Organization for regulating the questions related to the headquartering of Intersputnik in the USSR.
11. In particular, such ties were established with the International Organization of Radio Broadcasting and Television. Intersputnik also co-operates with CEMA and other international organizations.

12. For more detail on the technical characteristics of the Intersputnik communications system, see: I. Ya. Petrov, "The Intersputnik Agreement --An Important Act of International Cooperation," VESTNIK SVYAZI, No 8, 1972, pp 30-31; V. P. Minashin and V. P. Romantsov, "Cooperation of the Socialist Countries in the Area of Space Communications," "Po Programme 'Interkosmos'" [Under the Interkosmos Program], Moscow, Mashinostroyeniye, 1976, pp 335-348.
13. These documents have already been worked out and approved.
14. The convention was opened for signing on 29 March 1972 and came into force on 30 August 1972.
15. P. I. Lukin, "The Use of Satellites for Radio Communications," "Pravovyye Aspekty Ispol'zovaniya Iskusstvennykh Sputnikov dlya Tseley Meteorologii i Radiosvyazi," Edited by N. A. Ushakov, Moscow, Nauka, 1970, p 135.
16. For the text of the agreements see: "Yearbook of Air and Space Law 1965," Montreal, 1967, pp 423-439. In 1965, an additional arbitration agreement was also signed.
17. The name International Communications Satellite Consortium (Intelsat) was adopted on 28 October 1965.
18. The conference was held in Washington from 25 February through 21 March 1969, from 16 February through 20 March 1970, and from 14 April through 21 May 1971.
19. For the texts of the agreements, see: "International Cooperation in Outer Space: A Symposium," U.S. Senate, Doc. N 57-92, pp 609-651.
20. S. Courteix, "Recherche Scientifique et Relations Internationales," Paris, 1972, p 119; G. Lafferranderie, "Du regime définitif d'Intelsat," LA RECHERCHE SPATIALE, No 5, 1971, pp 25-28; A. M. Malavialle, "Le consortium international des télécommunications par satellites: Intelsat," LA RECHERCHE SPATIALE, No 2, 1973, pp 9-15.
21. For more detail on the discussion of these questions at the Washington Conference, see: V. S. Vereshchetin, "Legal Questions of Space Communications at the Washington Intelsat Conference," "Tendentsii Razvitiya Kosmicheskogo Prava," Edited by A. S. Piradov, Moscow, Nauka, 1971, pp 137-158.
22. The concept of "joint venture" has no defined international legal significance.
23. Conference document: Com. 11/11, 13 March 1969.
24. Conference document: Com. 1/SR 9 (Final), 15 March 1969.

25. O. F. Brital, "The Global System of Telecommunications by Satellite in Face of the Theory of 27 January 1967," "Proc. XII Colloq. Law Outer Space," California, 1970, p 65.
26. S. Michelson, "Communications by Satellite," FOREIGN AFFAIRS, Vol 48, No 1, 1969, p 73.
27. Conference document: 93, 8 March 1970.
28. B. Cheng, "Communications Satellites," CURRENT LEGAL PROBLEMS, Vol 24, 1971, pp 226-228; A. M. Malavialle, Op. cit., p 14.
29. G. Lafferranderie, Op. cit., p 27.
30. The general director of Intelsat began work in January 1977.
31. On the legal problems related to determining the Intelsat executive body, see: C. Patermann, "Actual Legal and Administration Problems of Intelsat Organization," "Proc. XIX Colloq. Law Outer Space," California, 1977, pp 351-356.
32. Conference document: 10, Art. VIII.
33. For the differences in the U.S. and Western European interpretations on the procedure for submitting recommendations of the assembly of parties on these questions, see: A. M. Malavialle, Op. cit., p 12.
34. "Pocket Guide to the Global Satellite System," Information Office, Comsat, 1974; P. Langereux, "Douze années de télécommunications spatiales," AIR ET COSMOS, No 539, 1974, pp 39-43.
35. As has been pointed out by S. Corteix, the actual inequality between the Americans and their partners "was apparent in the concluding of an unequal treaty" (S. Corteix, Op. cit., p 123). C. Colliard also writes that the advantages of the United States in the technical area also impede the implementing of the planned Intelsat reform (C. Colliard, "Mezhdunarodnyye Organizatsii i Ucherezhdeniya," Moscow, Progress, 1972, p 614.
36. AIR ET COSMOS, No 539, 1974, pp 39-43.
37. A circular orbit about 36,000 km high and with a zero inclination is termed geostationary. A satellite placed in this orbit is permanently above a certain spot of the earth's surface. Only a limited number of satellites can be placed in a geostationary orbit without interference.

CHAPTER 3: DIRECT TELEVISION BROADCASTING BY SATELLITE

Direct television broadcasting by earth satellites is a fundamentally new type of space communications, and its social, political and legal consequences have been actively discussed for a number of years in the various international organizations and in the literature.

This type of space communications can play an exceptional role in bringing people closer together, in raising the educational and cultural level, particularly in nations or regions with an insufficiently developed network of ground broadcasting. At the same time, the appearance of this new powerful means of communication raises serious political and legal problems related to the necessity of preventing the use of the direct broadcast satellites for encroaching on state sovereignty, for interference into internal affairs or for exacerbating relations between states.

Although a number of authors, particularly American, have asserted that direct broadcasting by satellites is a question of the distant future, and supposedly there is for this reason no need to be concerned with the problems of its legal regulation at present, the practice of international life repudiates such assertions.

As is known, in 1975-1976, an American-Indian project was carried out to broadcast education-type television programs to 5,000 Indian villages via the ATS-F satellite. The method of transmission used here represents one of the forms of direct television broadcasting (DTB) via satellites sometimes called "semidirect" broadcasting. For carrying out this project, in September 1969, NASA concluded a special agreement with the Indian Atomic Energy Department.

The American ATS-F satellite was put into a geostationary orbit on 30 May 1974. Initially the satellite was used for conducting experiments over American territory. Then it was shifted to another point for an experiment in transmitting educational programs to Indian territory.¹ During a year each day for 4 hours transmissions were carried out to 2,400 villages in which specially equipped TV sets with 3-meter antennas were set up. In another 2,600 villages participating in the experiment, the TV broadcasts were received via the usual ground satellite communications stations.

An important feature in this first international experiment in the area of DTB was the fact that the content of the TV programs (their subject included questions of agriculture, public health, family planning, school education, and so forth) was completely controlled by the Indian government. The programs were produced in India and transmitted to the ATS-F satellite by Indian stations located in Ahmadabad and Delhi.²

From the standpoint of international law, a completely different situation arises if in the future a state or its organizations wish to carry out direct broadcasting via satellites to the territory of another state, without asking the permission of the latter.

In the USSR and abroad, a significant number of studies has been published devoted to the international legal aspects of direct broadcasting via earth satellites. Among the Soviet research we should mention the work of G. P. Zhukov, B. G. Dudakov, Yu. M. Kolosov, P. I. Lukin and A. S. Piradov.³ The United Nations, its specialized agencies as well as the international non-governmental organizations have also devoted a great deal of attention to these problems.

From the large number of questions related to direct broadcasting via satellite, we will take up only certain ones which, in our view, are of fundamental significance in light of the efforts being made at present in the area of the international legal regulation of this type of space activity.

The concept of "radio broadcasting via satellites" in the broad sense of the word includes not only the television broadcasts, but also sound and other types of transmissions carried out using radio waves.⁴

In line with this certain authors have raised the question of whether the international legal regulation of the use of satellites for direct broadcasting should cover all types of transmissions via satellite or only the television transmissions. The necessity of a legal regulation primarily of TV broadcasting is determined by the special role of television in modern life and by the particularly strong impact of visual images which do not know linguistic barriers. DTB will make it possible to bring these video signals to any point in the world, and this previously was possible only for sound signals.

Unsanctioned television broadcasts via satellites to the territory of foreign states can represent a serious threat to the security and sovereignty of states. The French international legal expert C. Colliard has described such activity as a new form of the "occupation" of foreign territory and the enslavement of the population of one country by images and slogans.⁵ The Indian legal expert R. Hingorani has qualified such broadcasting of one of the forms of aggression using satellites.⁶

Specialists in the area of space communications technology differentiate two basic methods for receiving television programs which have been relayed

by communications satellites on the ground and transmitting them to viewers.⁷ In using the first of these methods for receiving the signals from space, large antennas are required with a diameter of 10-25 meters, highly sensitive receiving equipment, the amplification of the received signals using special equipment of a TV center and their subsequent transmission via the ground communications lines to the ordinary home receivers. Precisely this method is presently used in the national and international space communications systems, including Intersputnik and Intelsat.

A significant increase in the power of the satellite radio transmitter makes it possible to use a method of receiving the TV programs on the ground which is fundamentally different from the former. Here there is no necessity of large and expensive antennas and complex transceiving ground equipment, including television centers. This method has been named "direct television broadcasting."

In turn DTB is divided into two types, the differences between which are essential from the technical viewpoint, but are not of fundamental significance from the viewpoint of their international-legal regulation. These are direct transmissions to small collective ("communal") antennas with additional technical devices ("semidirect broadcasting") and direct broadcasts to individual home receivers.

The dividing of television space communications into the above-given types has been substantiated in the documents of the World Administrative Radio Conference on Space Communications held in Geneva in 1971. In accord with the definitions accepted at this conference, the concept of "direct reception" is extended simultaneously to individual and collective reception.⁸

Certain Soviet authors have noted that from the viewpoint of the international legal regulation it is advisable to disregard the dividing of satellite television broadcasting into the various types.⁹ It seems that this comment is valid only in terms of the two varieties of DTB (to collective and individual antennas). But as for broadcasting using large ground communications stations, or, as this is also termed in the literature, "point-to-point broadcasting," the transmissions of TV programs using such technical devices are easily put under national control, and for this reason the nature of their international legal regulation differs from DTB. With the different approach, the specific features of the legal qualification of DTB as a special type of space communications requiring special regulation are eliminated.

U.S. representatives in various international organizations and American legal experts have actively propagandized the idea that there is no urgency for an international legal regulation of DTB, since broadcasting to individual TV sets in all probability will not be possible before 1985.¹⁰ Here they refer to the first report of the UN working group on direct broadcast satellites. At the same time, this report also mentions that "direct television transmission to adapted home receivers from the technical viewpoint could have been feasible in 1975."¹¹ In the fifth report, the working group

noted: "Over the last several years, the technical possibility of direct broadcasting from satellites has come significantly closer to practical realization. This makes it possible to predict with some certainty that *operating systems* (emphasis ours, author) could arise in the next decade."¹²

Certain American authors have assumed that the state of DTB equipment and the already existing regulation of such activities generally eliminate the problem of elaborating special principles and provisions. Thus, in a report at the 17th International Colloquium on Space Law, a staff member of the Committee on Aeronautical and Space Sciences of the U.S. Senate, J. Gehrig, stated: "It is essential to bear in mind that satellite broadcasting which causes the greatest anxiety, and precisely television broadcasting to any receiver at any point of the world, will not occur at all. The technical differences between the television systems and the existing ITU rules make the use of satellites for broadcasting which would represent interference (into the internal affairs of another state, author) virtually impossible. The ITU rules contain the corresponding provisions on spillover, and states could relatively easily control the undesired transmissions."¹³

However, regardless of the specific dates for realizing DTB to individual receivers, the elaboration of international rules for such broadcasting will not tolerate delay, since from the legal viewpoint there is no fundamental difference between broadcasting to collective antennas (this is already a question of today) and broadcasting designed for individual reception. It is essential not to overlook the circumstance that, as experience shows, the elaboration of international legal documents and their acceptance by states require significant time.

The various aspects of DTB were initially discussed in the United Nations and its specialized agencies (chiefly the ITU and UNESCO) in parallel with other questions relating to satellite communications.¹⁴ In 1967, the UN General Assembly, upon the initiative of Sweden, specifically drew the attention of the UN Space Committee to the problem of DTB, and in 1968, the Assembly approved the recommendation of this Committee to set up a working group on direct broadcast satellites.¹⁵

The working group has been concerned with an interdisciplinary discussion of the questions of DTB via satellites, including the technical, social, cultural and legal consequences of this type of space activity. In 1969-1974, it held five sessions and submitted its reports to the UN Space Committee.¹⁶

In the course of discussing the DTB questions, the members of the working group and other UN bodies divided into the supporters and opponents of international legal regulation of DTB; serious differences arose over the nature of such regulation.

The opinion of a predominant majority of states was reflected in the UN General Assembly Resolution 2916 (XXVII) approved on 9 November 1972.

This recognized the necessity "of working out principles for the use of earth satellites by states for direct television broadcasting for the purposes of concluding an international agreement or agreements." The UN Space Committee and the UN General Assembly put the elaboration of principles for the activity of states in the DTB area among the primary questions on the agenda of the Legal Subcommittee of the UN Space Committee.

Several draft documents related to the international legal regulation of DTB were submitted to the Subcommittee for review. In particular, the corresponding proposals were submitted by the USSR, the United States, Argentina, Canada and Sweden (the last two nations did this jointly).¹⁷

The principles which states should follow in carrying out DTB were stated most consistently and fully in the draft Convention Governing Principles for the Use of Earth Satellites by States for Direct Television Broadcasting and which was submitted by the USSR to the 27th Session of the UN General Assembly.¹⁸

The Soviet draft contained the following basic provisions:

- 1) DTB should be carried out exclusively in the interests of peace, progress, the development of mutual understanding and the strengthening of friendly relations between peoples. It should help to raise the educational level of the population, to develop culture, and broaden international exchanges.
- 2) All states have an equal right to carry out DTB and to benefit from such broadcasting without any discrimination whatsoever.
- 3) DTB is carried out in foreign states only with the definitely expressed agreement of these states.
- 4) Transmission to other states carried out without the clearly expressed consent of the latter are recognized as contrary to the law and entail international liability. The same would be true of the broadcasts which harm the support of international peace and security, which represent interference into the internal affairs of states, which encroach on the basic rights of man, which contain propaganda of violence and atrocities, which undermine the bases of local civilization and culture, or which misinform the population.
- 5) States can take the measures accessible to them for countering illegal DTB carried out on their territory.
- 6) A state bears liability for all national DTB activities, regardless of whether these are carried out by governmental bodies or nongovernmental organizations and legal entities.

Forced to consider an opinion of a majority of states, the United States in March 1974 submitted to the UN working group its own working document on a draft of principles concerning direct broadcast satellites.¹⁹ Here, however, the U.S. delegate stressed that his nation had "serious stipulations on the advisability of approving binding principles in the area of such broadcasting."²⁰ The U.S. document lacks such a major principle as preliminary agreement of a state to broadcasting destined to its population.

Substantial progress in working out the legal principles of DTB was made in the Legal Subcommittee of the UN Space Committee in 1976 and 1977, when agreement was reached on a number of principles. These included: the applicability of international law, international cooperation, the liability of states, the right and duty to hold consultations, the peaceful resolution of disputes, notification of the United Nations, and others.²¹ However, the principle of preliminary agreement which was crucial to all legal regulation of DTB remained among those principles on which agreement had not been reached. In the draft Soviet Convention, this principle was formulated in the following manner: "The states who are participants of the current convention can carry out direct television broadcasting using earth satellites to foreign states only with the definitely expressed agreement of this by the latter" (Article V).²²

An analogous principle was contained in the document distributed by the Soviet delegation at the third session of the working group on direct broadcast satellites in 1970.²³ In one form or another it was supported by a majority of the delegations in the Legal Subcommittee of the UN Space Committee.

Since the enemies of the legal regulation of DTB, in establishing their positions, often utilize the slogan of "freedom of information," and proclaim it as a recognized principle in international law, the Soviet legal literature rightly devotes great attention to an examination of DTB as one of the mass information media.²⁴

At the same time, for international space law, DTB is primarily one of the types of the practical application of space. The specific features of DTB examined in this light consist in the fact that the aim of the activity carried out in space consists in obtaining the desired effect on the earth. In this manner the state engaged in DTB carries out activity not only in space but also on the earth (on its own or on foreign territory). In interpreting the problem of the international legal regulation of DTB on this level, we gain an opportunity to construct a legal concept of DTB on two fundamental principles: the freedom of space and respect for state sovereignty.

As one of the types of space activity, DTB is fully covered by the basic principles of international space law, including the principles stated in Article I of the Space Treaty: "Space, Including the Moon and Other Celestial Bodies, is open for exploration and use by all states, without any

discrimination whatsoever, on a basis of equality and in accord with international law...." From this stems the equal right of all states to DTB activities and the use of the benefits of such broadcasting without any discrimination whatsoever.

However, the freedom to use space for DTB purposes undoubtedly cannot be unlimited. A number of restrictions of a general and special nature are contained in the Space Treaty and in other sources of international space law.

Among these limitations, let us isolate two which are of general fundamental significance. According to Article III of the Space Treaty, DTB activities, as one of the types of the use of space, should be carried out in accord with international law, including the UN Charter. Article IX of the same Treaty requires that all activities in space be carried out "with due consideration of the corresponding interests of all other states...."

Obviously references to the freedom of space as a basis for unsanctioned activities the consequences of which tell on the territory of other states and consequently activities for interfering into the internal affairs of these states, cannot have any legal grounds under them.

As was pointed out above, international space law is permeated with a spirit of respect for the principle of state sovereignty. The nonextension of territorial sovereignty of states to space cannot be used as a pretext for violating state sovereignty on earth.

"From the legal standpoint," writes the Czechoslovak professor, J. Busak, "the relations between the transmitting (the DTB program, author) state and the receiving state should be viewed as relations between two sovereign states with equal rights to which are applied the general principles of international law stemming from the UN Charter.... The rights and obligations of states based on these principles, in all instances, including DTB, are always the same."²⁵

An analogous viewpoint was stated by C. Colliard: "A state whose territory could be 'blanketed' by transmissions received directly on its territory cannot play a passive role in relation to the transmitting state."²⁶

The position which has now gained broad support was reflected in the UN General Assembly Resolution "On the Elaboration of An International Convention Governing the Principles for the Use of Satellites by States for Direct Television Broadcasting."²⁷ The resolution contains repeated references to the necessity of observing the principle of state sovereignty in carrying out DTB. In particular, it states that the activities of states in the area of DTB should be based on the principles of mutual respect for sovereignty, noninterference into internal affairs, equality, cooperation and mutual benefit.

The necessity of respecting sovereignty in satellite broadcasting was also emphasized in a special UNESCO declaration approved by the General Conference of this organization on 15 November 1972.²⁸

The banning of direct satellite broadcasting to the territory of another state without its definitely expressed approval is a logical consequence of state sovereignty and one of its manifestations.

At the same time, in the mentioned UN and UNESCO resolutions, and particularly in the latter, mention is found of the necessity of ensuring a "free flow of information" and "freedom of information."

References to freedom of information, ensuring the free flow of information, and so forth are the favorite stratagem of the opponents of the principle of preliminary agreement of a state to television broadcasting to its territory. The U.S. representatives have particularly often referred to freedom of information, stating that the acceptance of provisions on preliminary agreement supposedly would set a precedent in establishing an obstacle on the path to the free flow of information and ideas.²⁹

In working for the recognition of the freedom of information as a principle in international law, the capitalist nations are in no way concerned with the rights of the individual or the good of peoples. Into the content of this principle they have invested a definite sense which borders on the right of interfering into the internal affairs of other states.

On the level of international law, the essence of the question is that the long established and generally recognized principle of state sovereignty is put in opposition to a provision (freedom of information) which never has had and does not have the nature of a generally recognized principle of international law, and in any instance cannot prevail over such fundamental bases of international law as state sovereignty and noninterference into internal affairs.³⁰

In this regard indicative are the conclusions which are found in a book published by a group of French scholars who specially studied the legal questions of direct satellite broadcasting.³¹ The authors of this book write: "In fact, it (freedom of information, author) is recognized chiefly in documents which as yet do not have a binding force.... However the case, even if freedom of information is recognized on the international level, it must be stated that this freedom is limited."³²

Other specialists concerned with this problem have also drawn attention to the absence of a generally recognized "principle" of freedom of information in international law.³³

The defenders of the "principle" of freedom of information put it in the sphere of the personal rights of man. Respect for the rights of man belongs among the progressive principles of modern international law. However, as

G. I. Tunkin emphasizes, the effect of international law on the area of human rights "does not mean either that the rights of man are directly regulated by international law nor that they have ceased to be basically the internal affairs of a state."³⁴

The West German legal expert M. Daises in his report submitted at the 17th International Colloquium on Space Law has written: "In international law, the sovereign rights of states should be viewed as taking priority in comparison with the right of an individual to the freedom of information which can be carried out solely within the limits set by constitutional or legislative means by the national sovereign. Precisely because of these sovereign rights, each state is free to permit or prohibit television broadcasts directed at its territory."³⁵

Thus, references to freedom of information as a pretext to reject the principle of preliminary agreement with DTB are invalid. The latter stems directly from the principle of state sovereignty, while freedom of information cannot be viewed as a recognized principle of international law, let alone have predominant strength in comparison with the basic principles of international law.

Along with the already mentioned principles and provisions of international law, a whole series of other international legal provisions to one degree or another are related to DTB via satellite.³⁶

Thus, international law, including space law, has long known the ban on the dissemination and propagandizing of ideas and views inimical to the cause of peace, security and well being of peoples.

The preamble of the Space Treaty directly points to the applicability of the UN General Assembly Resolution 110(II) of 3 November 1947 to space. This resolution condemns propaganda aimed at or capable of creating or intensifying a threat to peace, the violating of peace or acts of aggression. This provision has direct bearing on DTB.³⁷

The International Convention on eradicating all forms of racial discrimination which came into force on 14 March 1969 declares as contrary to the law any propaganda based on ideas or theories of racial superiority and any propagation of ideas based on racial superiority (Article 4).

A number of important provisions relating to DTB is found in the Declaration on the Principles of International Law concerning friendly relations and cooperation between states in accord with the UN Charter.³⁸ In particular, this declaration affirms the illegality of all forms of intervention directed against the political, economic and cultural bases of a state.

Nor has the Convention on the Use of Radio Broadcasting in the Interests of Peace worked out in the League of Nations in 1936 lost its definite significance. At present around 30 states are members of this Convention.³⁹

Another group of restrictions on satellite broadcasting is of a technical nature and is related to the necessity of preventing interference in the operation of satellites, as well as interference for other ground and space services using the radio spectrum. The coordinating of such questions is carried out by states within the ITU. The World Administrative Radio Conference on Space Communications set up in 1971 in Geneva by the ITU was the first to assign definite bands for the DTB service. It also approved a number of other decisions and recommendations dealing with the placing of satellites in a geostationary orbit, the restricting of the power of the emitted signals, and so forth. Important decisions on these questions were also approved at an ITU conference held in Geneva in January-February 1977.

Soviet and foreign literature has correctly drawn attention to the fact that some of the questions discussed within the ITU, for example the placement of satellites in a geostationary orbit, are not only of a technical nature but also have political and legal significance.⁴⁰

On the basis of what has been said, it is possible to conclude that the international legal provisions relating to DTB via satellites at present are contained in documents which are extremely diverse in terms of the range of participants, legal force, the subject of regulation and sphere of action. Systematization of the existing provisions and the elaboration of new ones brought to life by scientific and technical progress as well as the recognition of their indisputable legal force necessitate the concluding of an international agreement on the principles for the use of satellites for DTB by states.

However, any list of permissive and prohibitive principles which such an agreement might conclude inevitably would not be exhaustive. It would merely represent the general legal limits for permissible and impermissible actions in the area of DTB. The guarantee against possible abuses here is the principle of preliminary agreement which would make it possible for a state, proceeding from political, economic, technical, ethnic or other considerations, to impose additional limitations on broadcasting to its territory or completely prohibit such broadcasting.

The approval of this principle combined with the already recognized principle in space law of consultations between interested states (Article IX of the Space Treaty) will facilitate the solution to a number of other DTB problems, for example, the content of programs, spillover into a foreign territory, and so forth.

The elaboration and reinforcing in a single international agreement of the basic principles for the use of earth satellites for DTB have become an imperative of today. Considering that DTB represents a specific type of the use of space whereby activities are carried out simultaneously in space and on the earth, the right of a state to ban foreign broadcasting via satellites to its territory is one of the manifestations of its sovereignty, and an important guarantee against possible abuses with DTB.

FOOTNOTES

1. See "Report of the UN Conference on Satellite-Assisted Broadcasting Systems for Educational Purposes," UN Doc. A/AC.105/128 of 5 April 1974.
2. For more detail on the experiment, see: R. G. Hingorani, "Communication Satellite: An Indian Experiment," "Proc. XIX Colloq. Law Outer Space," Mimeo, 1976.
3. See, for example, G. P. Zhukov, "Mezhdunarodnoye Kosmicheskoye Pravo," Moscow, Znaniye, 1971, pp 26-31; Yu. M. Kolosov, "Massovaya Informatsiya i Mezhdunarodnoye Pravo" [Mass Information and International Law], Moscow, Mezhdunarodnyye Otnosheniya, 1974; B. G. Dudakov, "International Legal Questions of Using Satellites for Direct Television Broadcasts," PRAVOVEDENIYE, No 4, 1970; "Mezhdunarodnoye Kosmicheskoye Pravo," Moscow, Mezhdunarodnyye Otnosheniya, 1974, pp 171-185; B. G. Dudakov and Yu. M. Kolosov, "Massovaya Informatsiya Cherez Kosmos" [Mass Information Via Space], Moscow, Znaniye, 1975; and others.
4. For the definition of radio communications and radio broadcasting contained in the Appendix to the International Telecommunications Convention, see: "Mezhdunarodnaya Konventsia Elektrosvyazi (Montre, 1965 g.)" [International Telecommunications Convention (Montre, 1965)], Moscow, Izvestiya, 1969, pp 62-63.
5. C. Colliard, "Préface," in: S. Courteix, "Télévisions sans frontières," p VIII.
6. R. G. Hingorani, Op. cit.
7. M. Kaplanov, "The Space Communications Channel," IZVESTIYA, 5 May 1973.
8. UN Doc. A/AC.105/100, pp 74-75.
9. "Mezhdunarodnoye Kosmicheskoye Pravo," p 175.
10. See, for example: E. Galloway, "Direct Broadcast Satellites," "Proc. XVII Colloq. Law Outer Space," California, 1975, pp 30-41.
11. UN Doc. A/AC.105/51, p 4.
12. "Report on the Committee on the Peaceful Uses of Outer Space," New York, 1974, p 10.
13. J. J. Gehrig, "Broadcasting Satellites--Prospects and Problems," "Proc. XVII Colloq. Law Outer Space," p 51.
14. C. A. Colliard, "Les satellites de radiodiffusion directe," "Annuaire français de droit international," Vol XVIII, 1972, pp 717-730.

15. UN General Assembly Resolution 2453 (XXIII) of 20 December 1968.
16. UN Doc. A/AC.105/51, A/AC.105/66, A/AC.105/83, A/AC.105/117, A/AC.105/127.
17. UN Doc. A/AC.105/127, Appendices II-V; A/AC.105/134; A/AC.105/C. 2/L. 102.
18. PRAVDA, 11 August 1972.
19. UN Doc. A/AC.105/W.G.3(V), CRP. 2, 11 March 1974.
20. "Press Release," U.S. Mission, Geneva, 13 March 1974.
21. UN Doc. A/AC.105/171.
22. PRAVDA, 11 August 1972.
23. UN Doc. A/AC.105/83 of 25 May 1970, Appendix IV.
24. Yu. M. Kolosov, "Massovaya Informatsiya i Mezhdunarodnoye Pravo."
25. J. Busak, "La radiodiffusion directe par satellite," "Proc. XVII Colloq. Law Outer Space," p 4.
26. C. A. Colliard, "Les stellites de radiodiffusion directe," p 21.
27. UN General Assembly Resolution 2916(XXVII) of 9 November 1972.
28. "Declaration of Guiding Principles on the Use of Satellite Broadcasting for Free Dissemination of Information, for the Development of Education and for the Broadening of Cultural Exchanges," UN Doc. A/AC.105/109 of 12 February 1973. For a critical review of this declaration, see: Yu. M. Kolosov, "Massovaya Informatsiya i Mezhdunarodnoye Pravo," pp 90-91.
29. "Statement by the U.S. Representative at the Fifth Session of the UN Working Group on Direct Broadcast Satellites," Geneva, Press Release, 13 March 1974.
30. V. Korobeynikov, "What is Concealed Behind the Concept of 'Freedom of Information'?", MEZHDUNARODNAYA ZHIZN', No 1, 1976, pp 95-103; B. G. Dudakov and Yu. M. Kolosov, "Massovaya Informatsiya Cherez Kosmos," pp 9-16.
31. "L'utilisation de satellites de diffusion directe," Paris, Press. Univ. France, 1970.
32. Ibid., p 55.

33. See, for example: M. G. Marcoff, "Traité de Droit international public de l'espace," Fribourg--Geneva--Paris--New York, Ed. Univ. Fribourg, Suisse, 1973, pp 620-621.
34. G. I. Tunkin, "Teoriya Mezhdunarodnogo Prava," Moscow, Mezhdunarodnyye Otnosheniya, 1970, p 93; see also: V. A. Kartashkin, "Mezhdunarodnaya Zashchita Prav Cheloveka" [The International Defense of the Rights of Man], Moscow, Mezhdunarodnyye Otnosheniya, 1976.
35. M. A. Dausés, "La liberté de l'information en matière de la télévision directe par satellites," "Proc. XVII Colloq. Law Outer Space," p 23.
36. See, for example, the list of international documents relating to DTB submitted by a group of nations to the United Nations (A/AC.105/133 of 6 June 1974).
37. Also relating to DTB is a series of other articles of the Space Treaty: I, II, VI, IX and XI.
38. UN General Assembly Resolution 2625(XXV) of 24 October 1970.
39. The USSR is not among these states.
40. B. G. Dudakov, "Legal Problems of the Use of Orbits for Earth Satellites," SOVETSKOYE GOSUDARSTVO I PRAVO, No 4, 1973, pp 78-84; J. Busak, "Geostationary Satellites and the Law," TELECOMMUNICATION J., No 8, 1972, pp 487-491.

CHAPTER 4: SPACE NAVIGATION

Satellites used for navigation requirements of civil aviation and maritime navigation, both from the technical and from the international legal viewpoint, have much in common with communications satellites. Often navigation satellites are called sea and air communications satellites.

According to the definition proposed by the UN Working Group, by a system of navigation satellites one understands "such a system which includes all types or a portion of services needed for safety and the economic operation of aircraft, vessels, and so forth."¹

The legal questions related to the use of satellites for navigation purposes do not require the elaboration of a special status for this category of space objects as is required, for example, for the direct TV broadcast satellites. Although, like the other types of applications satellites, they are designed not for space research per se, but rather for satisfying terrestrial needs, their use does not involve interference into the sphere comprising the domestic competence of states. The principles and provisions of space law which define the general conditions for space objects are also extended to navigation satellites.

The task of the international legal regulation consists primarily in elaborating the institutional forms which will provide for the creation and functioning of navigation satellites systems in accord with the generally recognized principles and provisions of international law.

Should such international systems be set up by already existing or new international organizations? What are the functions, the membership, structure and powers of the leading bodies of these organizations? Should such an organization be concerned solely with the space portion of the system or also with the ground? What is the procedure for financing these systems and is the participation of private capital in their creation to be permitted? What sorts of questions have been and are being discussed in the literature and at international conferences related to the future use of navigation satellites?²

The basic advantages of employing satellites for navigation come down to the following: an improvement in all types of communications with ships at sea and aircraft in flight for increasing their efficient use; improving the ship and aircraft radio fixing service for increasing navigation and flight safety; improving the use of the radio spectrum for developing new frequency bands.³

According to calculations given in American literature, by 1980 the number of large-tonnage vessels (over 10,000 tons) will reach around 14,000,⁴ and at each moment 70 percent of these vessels can be at sea. More than 90 percent of communications between vessels and the shore is now handled by radio telegraph using Morse code in the high- and medium-frequency bands. Due to poor signal transmission conditions and other factors, these communications are unreliable, and the daily traffic between the ship and the shore does not exceed 45 words. According to 1966 data, ship collisions and groundings occurred an average of 15 times a day. A satellite system capable of providing more effective communications and navigation services will make it possible to reduce such accidents.⁵

The aircraft navigation system is particularly important in flying across oceans, since after approximately 500 km away from land the intercontinental aircraft do not have reliable contact with ground stations. The use of satellites will make it possible to keep air communications under constant control of the ground centers, in particular, over the routes of the heaviest traffic, for example over the Atlantic. Thus, the Aerosat system is aimed at localizing aircraft over the Atlantic every 5 minutes with an accuracy on the order of 1800 meters.⁶

On the international level, a discussion of the range of questions involved with the advisability and technical feasibility of using satellites to solve problems of marine and air navigation was held under the United Nations and in two specialized UN agencies, the International Civil Aviation Organization (ICAO) and the Intergovernmental Maritime Consultative Organization (IMCO).

In 1966, the UN Space Committee and later the UN General Assembly (Resolution 2223/XXII) approved the setting up of a working group on a system of navigation satellites. The group was given the task of examining the technical, financial, organizational and legal aspects of the problem related to the necessity and possibility of setting up a navigation satellite system.

The working group held its only session in July 1967 with the participation of representatives from the involved UN specialized agencies. Legal questions were virtually not examined by it, and subsequently the discussion of these questions, in this instance concerning the marine navigation satellites, was held within the IMCO. In its conclusions the group followed the opinions of the ICAO and IMCO as potential users of the future system.

The members of the group expressed their conviction that the elaboration of a navigation system for the needs of civil aviation and marine navigation using satellites was technically possible. However, the group refrained from any recommendations whatsoever on the functions, technical characteristics and organizational principles for the international navigation system or systems, merely saying that these questions could be examined only after the elucidation of the precise requirements, economic estimates and further experiments and research.

Nevertheless the report of the work group pointed out that the use of space technology could be required in the near future in the controlling and observing of air flights in regions where the use of conventional ground radars is impossible, and in marine fisheries which gradually were extending their operations encompassing all regions of the oceans.⁷

The subsequent discussion on the practical needs in setting up the navigation satellite systems, the organizational forms of cooperation and the related legal problems was held in the UN specialized agencies as well as between the European Space Research Organization (ESRO) and the United States.

The similarity in the navigation problems for civil aviation and marine navigation explains the fact that in the first stages the technical devices (satellites) and the institutional forms were conceived of as the same for the marine and aeronautical services. Subsequently, however, the practical work of developing the satellites and an examination of the organizational questions were carried out separately for the marine and air navigation services.

In carrying out one of its main tasks for assisting in the development of international civil aviation, recently the ICAO has devoted a great deal of attention to the questions of using space technology for civil aviation. In 1968, the basic leading group of the ICAO, the Assembly, unanimously approved a resolution which stated that the ICAO bears responsibility for determining the position of international civil aviation in terms of using space technology.⁸

In the same year of 1968, the ICAO Aeronavigation Commission set up a group of experts on the technical questions for the use of space technology for the needs of international civil aviation, and this was abbreviated the ASTRA group. The activities of the group were basically linked to determining the technical characteristics of the air navigation satellite system. Characteristically, the list compiled by the group for the possible areas of using space technology in international civil aviation contained 37 points.

The basic aim of the future ICAO activities in relation to space, as this is defined in the ICAO document submitted to the United Nations, is "the creating of an operational air navigation satellite system."⁹ However, the approach of the ICAO to creating such a system has been marked by

great circumspection. In the opinion of the ASTRA group, this should be preceded by experience acquired as a result of operating an experimental system which would function in parallel with the conventional presently used communications and radio fixing systems. The year 1980 has been named as the closest date for the full operational use of the system "even in using accelerated procedures." The group does not exclude that this time could be moved back 5 or more years.¹⁰

The western European nations, in endeavoring not to fall behind the United States in the area of earth-oriented space research, proposed a program for setting up a satellite system for air navigation based on developments which had been carried out in this area by the French National Space Research Center. The decision to carry out this work within ESRO was approved in November 1968 and affirmed in July 1970 by the European Space Conference.¹¹ On 20 December 1971, a special agreement came into force signed by the interested ESRO member nations on this question.¹²

The dependence upon obtaining American launch vehicles for orbiting the navigation satellites forced ESRO to carry out the program which was named Aerosat jointly with the United States. The talks on carrying out this program had a very stormy nature and were repeatedly accompanied by outbreaks of acute political differences between the Western European countries and their overseas partners.

Initially the talks were held between ESRO and NASA. After many questions had already been agreed upon, the U.S. government at the start of 1971, informed ESRO that henceforward the American side in the talks would be represented by the Federal Aviation Agency (FAA). As a result, all the discussions started all over. At the same time, the United States let it be known that the joint program could be extended only to the zone of the Atlantic, while the Americans preferred to carry out an independent program for setting up a navigation system for the Pacific zone.

By the end of the summer of 1971, a memorandum had been approved between ESRO and the FAA in accord with which the program was to be based on the principles of equal rights, duties and expenditures between the Western European nations and the United States. One portion of the program concerned with the creation of the satellites themselves was viewed as the general ("integrated"), and the other relating to the establishing of ground stations and the necessary equipment on the aircraft was considered only as "coordinatable." For carrying out the program, an Aerosat Council was to be set up and its decisions would be taken with the consensus of both sides.

In February 1972, the U.S. president vetoed this memorandum and abrogated the preliminary understanding. The U.S. government notified its partners that "after a study carried out considering the domestic, parliamentary and international aspects of this question, the president had decided that the draft agreement between ESRO and the FAA on the air navigation satellite

program did not conform to the policy of the U.S. government and should be radically revised."¹³

The American arguments came down to having the agreement on the development on the satellites be concluded by ESRO directly with one of the private American industrial firms, while the program itself would be of a strictly experimental nature. At the same time, the United States agreed to conclude an additional agreement between ESRO and the FAA on the procedure for utilizing this system.

Thus, that portion of the program which under the previously approved memorandum was considered to be "integrated," was now offered to Western Europe as one to be carried out jointly with an American firm, while the "coordinatable" portion of the program remained within the limits of an agreement between ESRO and a U.S. governmental body, the FAA. ESRO was confronted with the prospects of conducting talks on the creation of the system concomitantly with two American parties: a private company and the FAA.

On the U.S. refusal to follow the previously reached understanding, the English newspaper DAILY EXPRESS wrote that "American entrepreneurs have caught an opportunity to extract large profits and have applied intense pressure on the White House, after which all the goodwill of Washington evaporated rapidly and without a trace."¹⁴ ESRO announced its intention to begin independently on the experimental design work related to the Aerosat program.

In the autumn of 1972, the dialogue between the United States and Western Europe over the question of the Aerosat system was resumed under conditions dictated by the United States. By the start of 1973, ESRO, the FAA and Canada which had joined in the program agreed on a draft for a new memorandum on a "general program of experiments and evaluation of the potential possibilities of aeronautic satellites." According to this memorandum which defined only the general requirements for the space portion of the system and the questions of its experimental use, an Aerosat Council should be set up and representing the interests of all parties participating in the program. The memorandum pointed out that the Aerosat program would be carried out following the recommendations made by the ICAO.

New differences of opinion arose after the interference of American aviation companies, and these deferred the signing of this memorandum for more than a year. This time the differences arose over the question of the frequency bands and other technical characteristics of the system. The House of Representatives of the American Congress, in considering the objections of American aviation companies, refused to approve the FAA allocations for work on developing the Aerosat system. The talks again had reached a blind alley.¹⁵

Only at a price of new concessions by Western Europe in May 1974, finally, was the memorandum initialed.¹⁶ On 2 December 1974, a second agreement was

signed on the development of the satellites for the Aerosat system. The participants of this agreement were ESRO, Canada and the American Comsat General Company.¹⁷ In accord with the agreements reached, two satellites of the Aerosat system were to be placed in the Atlantic zone. The first of these satellites was to be launched at the end of 1979.¹⁸

The history of the holding of the talks and an analysis of the concluded agreements dealing with the Aerosat system again affirm that the United States, having passed the Comsat Law in 1962, and then having set up Intelsat, had assumed a firm policy of turning the earth-oriented use of space technology into a sphere for private capital. Both the U.S. government and Congress on these questions acted solely from positions of defending the interests of their monopolies. A clear example of this is the blocking initially by the White House and later by Congress of international documents relating to the air navigation satellite system and which previously had been approved with the official U.S. governmental bodies. In the first instance the veto was actually imposed by the space firms, and in the second, by the private aviation companies.

The talks on setting up Aerosat did not eliminate the question that in the future the need could arise for developing a broad and equal international agreement on a system of air navigation satellites for experimental and operational purposes. Among the existing intergovernmental organizations, the ICAO is the most suitable forum for working out such an agreement.

The interest of a broad group of nations in using satellites for marine navigation is apparent in the creation of the International marine satellite communications organization.

Upon the initiative of the IMCO, from 23 April through 9 May 1975, an intergovernmental conference was held in London to create the International Satellite System for Marine Communications. This conference was prepared due to the beneficial activities of a group of experts on marine satellites organized in 1972 by the IMCO Committee for Safety at Sea.¹⁹

The IMCO began to be concerned with the questions of using space technology in the interests of marine navigation as early as 1966.²⁰ Even in the course of the preliminary discussion of this problem within the IMCO, the demand was voiced that the marine satellite system be used primarily not only and not so much for navigation purposes in the immediate sense of this word (determining the location of a vessel), but rather for improving all types of marine communications.

After a detailed examination of the question by the group of experts and the Committee for Safety at Sea, the Eighth IMCO Assembly in November 1973 recommended the convening in 1975 of an international intergovernmental conference for solving the question of establishing an

international marine satellite system and, with the positive solution to this question, concluding a corresponding agreement.²¹

The work of the conference was to be based on the report of the group of experts on marine satellites, and this report was approved at its fifth session in September 1974.²² The preliminary version of the report was distributed to the governments and international organizations, and evoked many commentaries and comments.

The final document was a comprehensive document which reflected the technical requirements and the possible parameters of the future system, the economic calculations, as well as the organizational measures needed for establishing it. Appended to the report were two draft international agreements: a draft convention on the International Organization for a Marine Satellite System (Inmarsat) and a draft Protocol on Privileges and Immunities of the International Organization for the Marine Satellite System. On a number of articles in these drafts, the group of experts did not reach agreement, and they were given in several versions.

Thus, in the area of using satellites for the purposes of marine navigation, the elaboration of the international legal principles for setting up the system was first carried out within an UN specialized agency and preceded the experimental phase of setting up the system. Here a major role was played by Soviet initiative in submitting the "Tentative Principles for Creating an International Organization on Marine Satellite Communications and Radio Fixing" at a session in November 1972 of the group of experts on marine satellites.²³ Many provisions of this document were approved by the group of experts and incorporated in the draft proposed by them. Here of important significance was the fact that a majority of states did not wish to repeat the Intelsat experience where the United States unilaterally imposed complete organizational decisions on its partners.

In the course of the discussions held in the IMCO, the United States took pains to convince the other states to reject the idea of establishing a new intergovernmental organization. The United States proposed that the setting up of a marine satellite system be turned over to a consortium set up like Intelsat in its initial form or the present organization of Intelsat.

The first U.S. proposal was not supported, since, in the opinion of a predominant majority of states, control over the international marine satellite system should be carried out on a governmental level. The second proposal was equally turned down, and in accord with this Intelsat would have become the organization determining the policy and exercising control over the marine satellite system. One of the reasons was that Intelsat did not include a number of major sea powers, while the satellite system to be developed should be truly international. In addition, certain small nations which had a large merchant fleet rightly feared that their votes would not have proper influence in Intelsat.

Under these conditions, the United States proposed using Intelsat as an organization which would provide and manage the equipment of the system on the basis of a special agreement with the future intergovernmental organization. At the same time the United States was constantly against the establishing of a new international organization and for this reason initially held back its position on the entire report of the IMCO group of experts.²⁴

A review of the given problem made by the competent IMCO bodies showed that a majority of states was in favor of setting up an independent intergovernmental organization which would carry out the management and controlling functions for the marine satellite system which would improve communications with marine vessels for the purposes of ensuring safe navigation and increasing the efficient management of the fleet. The powers of such an organization were to be extended primarily to the space portion of the system, or to the space "segment," as it is called in the IMCO documents.

The question of whether or not the organization would own the satellites or lease them from other national or international organizations has remained open. The possibility of signing a special agreement is not excluded and under this the direct technical management of the system would be entrusted to another body or organization. The ground communications stations working with the satellites should belong to the states or to their operational organizations.

The differences of opinion over a number of fundamental questions which arose at the conference devoted to the establishing of the marine satellite system held in April-May 1975 in London did not make it possible to approve final decisions on the discussed documents. Another two sessions of the conference had to be held for overcoming the differences, and these took place also in London in February and September 1976.

At the first session an understanding was reached reflected in the final statement of the conference on the necessity of setting up a worldwide satellite system for marine communications and a new international intergovernmental organization for managing such a system.

In the course of the second session of the conference, two constituent documents were basically agreed upon: the convention signed by the governments, and an operational agreement of which governments or national organizations appointed by them (state or private) could be the participants. The remaining disputed questions (on the maximum number of votes of the organization members in the council, on the possibility of making exceptions to the convention and on the official and working languages of the organization) were resolved at a third session of the conference. This opened the way to signing the Convention on the international organization for marine satellite communications (Inmarsat) and the corresponding operational agreement which regulated the rights and duties of the members of the organization in the financial and technical areas.²⁵

The convention established that all states could join it, and the vessels of all flags and classes could use the services of Inmarsat. The organization was to carry out its activities exclusively for peaceful purposes.

The superior managing body of Inmarsat is the assembly, where all members of the organization are represented, and each of them has one vote.

The main executive body responsible for the space portion of the system is the council. This body consists of 23 participants of the operational agreement, 19 of which are determined depending upon the amount of their contributions to Inmarsat. Four members are represented on the council independently of the amount of their contributions for the purpose of ensuring the principle of a just geographic representation on the council.

The voting procedure on the council does not exclude the possibility of employing the principle of weighted voting whereby the votes of the council members depends upon their proportional participation in the capital investments and upon their need to use the services of the system. This voting formula was the result of a compromise decision which considered that the council would be made up primarily not of governments but rather operational organizations acting as independent legal entities, and could not serve as a precedent. According to the convention, the superior executive of Inmarsat was the general director appointed for a term of 6 years from among candidates submitted by members of the organization.

Inmarsat should cooperate with the United Nations and its specialized agencies, as well as with other international organizations. Close cooperation and contact would also be maintained with the IMCO.

For the purpose of preparing the practical activities of Inmarsat, a preparatory committee was set up. Naturally one of the basic questions which this body encountered was related to establishing the possibility of developing or leasing the "space segment" for the needs of the organization.

As for the actual development of satellites for marine navigation, during one of the sessions of the IMCO group of experts in September 1974, it was given information on the Marisat satellite system being developed by the American Comsat General Corporation, as well as the ESRO Marots satellite. However, the group of experts correctly decided that at this stage it would be premature to examine the role which these systems could play in a global marine satellite system, and it refrained from any recommendations whatsoever on this.

The American Marisat system which was to be put into operation initially in 1975 was designed to provide satellite-assisted communications for U.S. naval vessels as well as for merchant shipping. Two satellites had been placed in a geostationary orbit since 1976: one was in the Atlantic and the other in the Pacific. Using two ground stations which had been built on the Pacific and Atlantic coasts of the United States as well as special

ship equipment, the satellites were to provide around-the-clock two-way communications with the shore for vessels in the Pacific and Atlantic.

The development and operation of the system were the concern of Comsat General, a daughter company of the American Comsat Communications Satellite Corporation; Comsat General had invested an initial capital of 80 million dollars into the Marisat Project.²⁶ The first experiments of communications with maritime vessels via Intelsat satellites were carried out by Comsat in 1972 and 1973.²⁷ In 1976, only 20 merchant vessels used the services of Marisat which handled basically the needs of the American Navy.²⁸ The Comsat representatives endeavored to involve a maximum number of ship-owning companies from the capitalist world in this system.

The Western European Marots satellite was designed for the experimental handling of radiotelephone, radioteletype and radiotelegraph communications for merchant vessels and the transmission of data in a digital form, as well as for studying the problems of navigation measurements and the automatic transmission of information on the current position of the vessel-to-ground stations.

The satellite was developed by the European Space Agency upon the initiative of England who had assumed over 50 percent of the expenditures of 75 million dollars needed for the creation of this satellite and the ground stations. The satellite was to be launched by an American launch vehicle in 1978. It was to be placed in a geostationary orbit over the Indian Ocean.²⁹ A review of the legal and organizational questions concerning the use of satellites for the purposes of air communications and marine navigation makes it possible to draw certain conclusions.

The creation of international satellite systems for sea and air communications and navigation requires the establishing of an international, intergovernmental organization (or organizations). The basic task of such an organization would be to provide the space portion of the system which would be paid for by the member states.

The international, intergovernmental organization, regardless of the commercial nature of its activities and the ensuing particular features, should be based upon the principle of the sovereign equality of states.

In practical terms this principle should be reflected in the universality of the organization, in the right of access to the system for states which are not members of it, in the structure, powers and procedures of its managing bodies, as well as in the procedure for resolving international disputes.

Participation in the organization should not exclude the right of a state to set up other systems and organizations if they consider this advisable.

The constituent convention and activities of the organization should conform to the generally recognized principles and provisions of international law generally and international space law, in particular.

The activities of the organization should pursue only peaceful purposes and be carried out in close contact with the United Nations and its specialized agencies.

FOOTNOTES

1. UN Doc. A/AC.105/38 of 3 August 1967.
2. See, for example: D. Hervy, "Problèmes juridiques des satellites d'aide aux transports maritimes et aériens," "Proc. XVII Colloq. Law Outer Space," California, 1975, pp 211-215; G. Lafferranderie, "Les satellites d'aide à la navigation maritime," LA RECHERCHE SPATIALE, No 3, 1973, pp 15-18.
3. "Practical Benefits of Space Exploration," New York, United Nations, 1969, pp 37-41.
4. In 1974, there were over 8,000 such vessels (IMCO Doc. MARSAT V/6, 16 September 1974).
5. J. SPACECRAFT AND ROCKETS, Vol 10, No 9, 1973, pp 547-548.
6. LA RECHERCHE SPATIALE, Vol XII, No 3, 1973, p 14.
7. UN Doc. A/AC.105/38 of 3 August 1967, pp 4-5.
8. UN Doc. A/AC.105/100, 1972, p 142.
9. Ibid., p 146.
10. Ibid.
11. J. Arets, "Le programme de satellites aéronautiques de l'Organisation Européenne de Recherches Spatiales," LA RECHERCHE SPATIALE, No 3, 1973, p 12.
12. LE DROIT DE L'ESPACE. BULLETIN D'ANALYSES ET D'INFORMATION, Paris, No 4, 1974, p 81.
13. AIR ET COSMOS, No 425, 1972, p 15.
14. DAILY EXPRESS, 9 March 1972.
15. AIR ET COSMOS, No 506, 1973, p 39; FLIGHT, Vol 104. No 3360, 1973, pp 182-183.

16. ESRO NEWSLETTER, No 7, 1974, p 5. The memorandum came into force on 2 August 1974. For the text see: "Space Law. Selected Basic Documents," U.S. Government Printing Office, Washington, 1976, pp 341-363.
17. For the text, see *ibid.*, pp 364-386.
18. In the spring of 1977, due to the refusal of the U.S. Congress to allocate the necessary funds, the Aerosat program was again threatened with complete collapse. See: AIR ET COSMOS, No 672, 1977, p 51.
19. M. Ye. Volosov, A. L. Kolodkin and N. D. Smirnov, "The IMCO and Certain Legal Questions Related to Setting Up an International Marine Satellite Communications Service," in the book: "Materialy po Morskomu Pravu i Mezhdunarodnomy Torgovomy Moreplavaniyu" [Materials on Maritime Law and International Merchant Shipping], No 6, Moscow, Transport, 1974, pp 23-31.
20. UN Doc. A/AC.105/100, 1972, p 148.
21. IMCO Resolution A.305 (VIII) of 23 November 1973.
22. MARSAT v/6, 16 September 1974.
23. MARSAT ES.1/36.
24. MARSAT, v/6, 16 September 1974, pp 2-3.
25. On 3 September 1976, the convention was signed by the representatives of 12 states, including the USSR.
26. In addition, the creation of the system was partially financed by three other American firms.
27. "Maritime Communications Via Satellite. Comsat General Corporation," August 1974.
28. "Comsat General Corporation. Marisat Status Report," 9 July 1976.
29. FLIGHT, Vol 104, No 3367, 1973, p 484; AIR ET COSMOS, No 497, 1973, p 40; ESA BULLETIN, No 1, 1975, pp 32-33.

CHAPTER 5: SPACE METEOROLOGY

Human production activities depend largely upon meteorological conditions. Agriculture, many industrial sectors, all types of transportation, hydro-electric plants, communications lines and the power transmission systems require prompt and reliable weather forecasts. Hence the constantly growing demands on improving the existing forecasting methods.

One of the serious difficulties here is that the network of ground stations carrying out constant observation of the weather provides a sufficiently dense coverage for only one-fifth of the earth's surface, while the remaining four-fifths are over the world's ocean and in inaccessible and uninhabited areas of land.

The air masses and atmospheric currents which influence the nature of the weather during a period of 24 hours can shift 2,000-2,500 km. This means that for compiling a weather forecast for any point for just 24 hours to come it is essential to analyze the weather observations around the given point for at least a radius of 2,500-3,000 km, and for compiling long-range forecasts, there must be a thorough study of processes occurring throughout the entire layer of the atmosphere above the entire territory of the earth. Here certain important characteristics in the condition of the upper atmospheric layers cannot be obtained at all using ground equipment.

A new page in the history of meteorology has been opened with the use by the weather service of earth satellites making it possible to carry out regular and systematic observations over the development of atmospheric processes around the entire world.

In the USSR, the Meteor space system has been working successfully since 1967. This consists of weather satellites and a range of ground equipment.¹ The information received from the satellites includes pictures of the cloud cover on the daylight and nighttime faces of the earth, as well as data on the thermal energy reflected and radiated by the earth and atmosphere. These materials are promptly transmitted to the weather institutions and forecast centers of the USSR and other nations, and are widely used for compiling

weather forecasts as well as for scientific purposes. Special communications channels make it possible to transmit weather charts, graphs and photographs of the cloud cover and other data by wire or radio. One of these international communications channels the operation of which started in 1964 exists between Moscow and Washington.

The appearance of weather satellites which have provided good help to the weather service has necessitated a different approach to international cooperation in this area. Its organization has been facilitated by the fact that the use of satellites for meteorological purposes has not necessitated the creation of specialized international organizations and has not encountered major international legal obstacles. Here an important role has also been played by the fact that the weather services of different nations have had behind them a long tradition of cooperation within the World Meteorological Organization (WMO) which brings together around 140 states.²

In addition to the greatly developed bilateral and regional cooperation, the weather services of virtually all countries of the world have come together to conduct two global cooperative programs in the area of meteorology. One of these programs, the World Weather Service, has a direct practical purpose, and the second, the Program for Investigating Global Atmospheric Processes (PIGAP) pursues primarily scientific aims.

The use of Soviet and American earth satellites as well as the weather satellites developed by other nations has been of decisive significance in carrying out both programs. The WMO and the International Council of Scientific Unions [ICSU] which have coordinated the carrying out of these programs have not developed and do not operate weather satellites. This is their fundamental distinction from Intelsat and Intersputnik. Global cooperation in the area of meteorology has been organized in such a manner that the international organizations, intergovernmental and public, are only the place for developing, coordinating and approving international programs, while their practical realization, in accord with the approved recommendations, rests almost completely on the shoulders of national organizations.

The World Weather Service (WWS) was conceived of and exists to coordinate the activities of all the national and international meteorological organizations of the world. It is aimed at conducting simultaneous observations around the world using satellites, ground stations and other technical devices, the rapid processing of the obtained data and their quick transmission to all interested states for drawing up weather forecasts and for carrying out scientific research.

Each of the three main elements in this global system (the collecting of data, their processing and transmission over wireless communications channels) requires enormous organizational and scientific-technical work, as well as great material outlays. Significant time and money are needed also for training specialists (particularly in the developing nations) capable of

interpreting and using the data received from the satellites. For this reason the creation of the WWS has gone through several stages and has not been limited by strict time phases.

The initial plan dating back to 1968-1971 was approved after careful preparatory work by the Fifth World Meteorological Congress in Geneva in 1967. The Sixth Congress held in April 1971 approved the revised plan of the WWS for the 1972-1975 period, and in this even greater emphasis was put on the use of earth satellites. In 1975, the Seventh World Meteorological Congress approved the new plan for 1976-1979.³

Even during the first stage of the WWS, the operating weather satellite systems of the USSR and United States were able to observe the atmospheric processes over virtually the entire globe. One of the examples of the achieved successes is the prompt warning of such dangerous phenomena as hurricanes and typhoons.

The current plan of the WWS envisages the launching of geostationary satellites located above the equator, as well as the launching of satellites into near-polar orbits. The USSR and United States have announced their intention to launch geostationary weather satellites. Two other satellites are to be put into geostationary orbit by the nations of Western Europe and Japan.⁴ However, the international system of weather satellites is viewed not as a single whole controlled from a common center, but rather as an aggregate of national and international satellites the work of which will be intercoordinated.

The satellite data, like ordinary weather information, are sent to three world meteorological centers located in Moscow, Washington and Melbourne, where they undergo appropriate processing and are then disseminated throughout the world. In addition to the world centers, includes a network of regional and national meteorological centers.

In 1962, the UN General Assembly turned to the International Council of Scientific Unions (ICSU) with a request to develop an extensive program of scientific research on atmospheric processes. This program would supplement the programs being carried out under the WMO.⁵ It was proposed that this work should involve the international scientific unions and the national academies of sciences which were members of the ICSU. The UN appeal served as a stimulus for the establishing of a new major international scientific project, the Program for Investigating Global Atmospheric Processes or PIGAP. The ICSU and the WMO were to be concerned with the planning and organization of this program, and on 19 October 1967 they signed a special agreement for this purpose.

PIGAP has as its task a study of the physical processes in the troposphere and stratosphere, a knowledge of which would help to improve forecasting accuracy and better the understanding of the physical basis of climate. For this purpose using computer methods, a series of theoretical atmospheric

models should be created with the simultaneous carrying out of observations and experiments to check the conformity of these models to the actual conditions. Here observations made within the WWS will be widely used, and the service, in turn, will be enriched by the scientific results obtained in carrying out FIGAP. In particular, from the FIGAP results it will be possible to provide recommendations on the optimum location of the network of meteorological observation stations and the required composition of measured meteorological parameters.

The FIGAP program provides for the organizing of various types of experiment: regional and global, each of which will use earth satellites. The first of them, the Atlantic Tropical Experiment, was carried out from 15 June through 30 September 1974. It was focused on studying the physical properties of cloud accumulations in the tropical region of the Atlantic and the influence of this "weather kitchen" on the general circulation of the atmosphere.⁶ The global experiments which are to be carried out not earlier than 1978 are still in the planning stage. However, even now it has been noted that for organizing them four geostationary satellites and two or three satellites in near-polar orbits will be required.

As is seen from the given examples, international cooperation in the area of space meteorology has gained broad scope and has good prospects. As an essential component it is being written into the existing general cooperation among meteorologists in all countries.

Weather satellites examine basically not the earth's surface but rather atmospheric processes of various scales. All nations, without exception, are interested in the practical application of the results from this research. For this reason the use of satellites for meteorological purposes on an international basis up to now has not posed serious legal problems. The international legal treatment of weather satellites at the given stage does not differ fundamentally from the general conditions of earth satellites, as these are defined by current space law.⁷

However, this does not mean that specific problems will not arise in this area in the future, requiring international legal regulation. Some of these problems can be clearly ascertained even now.

While presently the basic efforts of science and practice are focused on improving weather forecasts, tomorrow can bring the urgent problem of controlling the weather and of man's active influence on atmospheric processes. On limited local scales using ground equipment and aircraft experiments to combat bad weather phenomena are being carried out even now in a number of nations. The Soviet Hydrometeorological Service has achieved significant successes in carrying out this work, and in particular, in measures to protect valuable agricultural crops against hailstorms.⁸

The controlling of atmospheric processes on a large scale, while bringing benefits in some regions, can cause unfavorable changes on the territory

of other states. In this regard the prospects of a controlled change in the climatic conditions raises complex political and international legal problems.⁹ The latter cannot be solved solely within space law, since the regulation of space activity pursuing the designated aims is only a portion of a more general question of the international legal regulation of the use of modern scientific and technical devices for actively controlling the environment.

Although neither international law generally nor space law in particular contains provisions which directly relate to the work of actively controlling atmospheric processes, modern international law undoubtedly repudiates the sometimes heard thesis on the legality of everything that is not prohibited. The well-known Polish legal expert Manfred Lachs has rightly noted in his speech at one of the international astronautical congresses: "At present the old principle that everything not prohibited is permitted no longer is valid. The freedom of action is determined by the probability of violating the rights of others. From this stems a limitation of rights and the necessity of cooperation and consultation in the corresponding instances. This is particularly important for space."¹⁰

Many Soviet and foreign authors have pointed out that in modern international law there has been universal recognition of the notion that a state bears international legal responsibility in the event that its territory is used to cause harm to other states.¹¹

In examining this question on a broader level in terms of environmental problems, N. A. Ushakov has written: "Each state is obliged to carry out its activities within the limits of its jurisdiction and control in such a manner that these activities do not cause damage to the environment in other states or regions laying outside of national jurisdiction."¹² N. A. Ushakov considers it desirable to affirm and concretize this generally recognized notion in the provisions of an universal agreement.

If one turns to space law, it should be remembered first of all that Article IX of the 1967 Space Treaty which, in particular, obliges states, in carrying out space activities to properly consider the corresponding interests of all other states, and establishes a procedure of international consultation, when there is reason to assume that activities or an experiment planned in space by one state will create potentially harmful interference in the activities of other states.

Recently in Western literature a tendency has appeared for a very limited interpretation of the applicability of the provision for international consultation in carrying out space activity. The supporters of this viewpoint consider that Article IX of the Space Treaty provides for consultation only in those instances when the space activities of one state can interfere with the space activities of another state or states. These authors assert that the established procedure of consultation does not apply even to activities involving unfavorable changes in the terrestrial environment and space which are mentioned in the same Article IX.¹³

However, it is indisputable that prior to the elaboration of special legal provisions which regulate the group of international legal problems involved with the purposeful change of weather and climate, the consultations between states as envisaged by Article IX of the Space Treaty will remain an important means for settling possible international disputes in those instances when activities related to changing the weather and climate will be carried out using space technology. For this reason the restricted interpretation of the applicability of the consultation provision seems unacceptable to us and does not conform to the general sense of Article IX and the spirit of the Space Treaty.

Certainly the above-mentioned general provisions of international law and international space law do not eliminate the necessity of working out a special agreement or agreements which would regulate the activities of states in the controlled change of weather and climate. Such proposals have been repeatedly placed in both Soviet and foreign literature. E. G. Vasilevskaya considers it essential to conclude a special international agreement,¹⁴ Yu. Ya. Baskin and A. Yu. Baskin have written on the advisability of approving a declaration on general principles for the protection of the atmosphere,¹⁵ R. Taubenfeld and H. Taubenfeld (United States) have proposed approving a corresponding UN declaration and then a treaty,¹⁶ while S. Courteix (France) feels that a special international organization should be set up with broad powers.¹⁷

However, beyond any doubt the primary task of international legal regulation in this area should be not to permit the turning of the potential controlled change of weather and climate into a means for complicating the international situation and particularly into a means for waging war.

Concern for preventing the threat of using new scientific and technical methods for controlling nature, including the weather and climate, as a weapon of war was responsible for the Soviet Union submitting a draft Convention on Prohibiting the Control of the Natural Environment and Climate for Military and Other Purposes Not Compatible with Ensuring International Security, the Well Being and Health of People for review by the 29th UN General Assembly Session in September 1974.¹⁸

The timeliness of the Soviet initiative was affirmed, in particular, by the fact that according to information given in the US Congress, in 1967-1972, the Pentagon had spent over 21 million dollars to change the weather in South Vietnam over the regions under the control of the People's Liberation Army.¹⁹ The statements appearing periodically in the press on the Pentagon's plans to prepare for "meteorological and Geophysical Warfare" have long caused concern in the world public.²⁰

Under the influence of public opinion, 14 American senators in 1972 submitted to the US Congress a draft law prohibiting the use of any changes in the environment and the geophysical properties of the planet as weapons of war. The immediate reason for this draft law was the experiments which had

been carried out on man-made rain in Indochina for the purpose of flooding roads and preventing the transporting of freight in South Vietnam.

Of important significance for diverting activities related to the study of the possible improvement of weather and climate into peaceful channels meeting the interests of all mankind was the bilateral understanding between the USSR and United States reached in July 1974 for working out effective measures to eliminate the danger of using devices to control the natural environment for military purposes.²¹

The meetings and talks held made it possible for the USSR and the United States on 21 August 1975 to submit to the Disarmament Committee coordinated identical draft conventions for preventing the military or any other hostile use of the means of controlling the natural environment.²²

After thorough discussion, these drafts were used as a draft convention prepared by the Disarmament Committee; this draft was approved on a multilateral basis and in 1976 submitted to the 31st UN General Assembly. A predominant majority of assembly votes accepted the resolution to approve the convention. The resolution contained an appeal for the states to sign and ratify it in the near future.²³

The convention proposes that military or any other hostile use of the various means of controlling the natural environment which may have broad, lasting or serious consequences be outlawed.

From the convention it follows that among the various scientific and technical methods for controlling the natural environment, the use of space devices for influencing the weather and climate is to be prohibited, if these devices are designed for military or other hostile purposes.

The observance of the provisions in the convention should be secured by having each state, in accord with its constitutional procedure, approve the necessary measures to ban and prevent any activity contrary to the convention, as well as by consultation and cooperation among states. Complaints related to a violation of the obligations stemming from the convention are to be reviewed in the UN Security Council.

The convention specially stresses that its passage should not prevent the use of devices to control the natural environment for peaceful purposes or international economic and scientific-technical cooperation in the area of the utilization, conservation and improvement of the natural environment for peaceful purposes. In this manner the convention does not impose a general ban on carrying out national and international projects related to the active control of atmospheric processes, if such work is carried out in the interests of peace, the well being and health of people and with due respect for the legitimate interests of all states.

The broadest prospects for the further development of space meteorology, including the problems of controlling weather and climate, are to be found only by international cooperation and the use of recent scientific and technical achievements exclusively for peaceful purposes.

FOOTNOTES

1. PRAVDA, 4 June 1967.
2. D. A. Davies, "The Role of the World Meteorological Organization in Outer Space Affairs," "International Cooperation in Outer Space: A Symposium," U.S. Senate, Doc. 57-92, pp 331-363.
3. "World Meteorological Organization. Seventh World Meteorological Congress. Abridged Report With Resolutions," Geneva, 1975, pp 14 et seq.
4. "Europe in Space (A Survey Prepared by ESRO)," Paris, 1974, p 29.
5. UN General Assembly Resolution 1802 (XVII) of 14 December 1962.
6. Ye Tolstikov, "'Tropeks-74' Before Launching," PRAVDA, 3 May 1974.
7. E. G. Vasilevskaya, "Legal Problems of Space Meteorology and International Cooperation," "Pravovyye Aspekty Ispol'zovaniya Iskusstvennykh," Nauka, 1970, p 96.
8. Ye. Fedorov, "From Forecasts to Control of the Weather," PRAVDA, 30 January 1971.
9. A group of American authors who examined this question from the viewpoint of national law give data that in the United States more than one-half of the states introduced special legislation regulating the artificial control of the weather. These same authors give instances when the U.S. courts have examined suits on such problems ("Controlling the Weather," "A Study of Law and Regulatory Procedures," H. J. Taubenfeld (Ed.), New York, 1970, p XI).
10. International Academy of Astronautics. Doc. IAA/Sci. Leg. Ctee., November 1970. See also M. Markoff, "Implementing the Contractual Obligation of Art. I, par. 1, of the Outer Space Treaty," "Proc. XXVII Colloq. Law Outer Space," California, 1975, p 136.
11. See, for example: B. M. Klimenko, "Gosudarstvennaya Territoriya" [State Territory], Moscow, Mezhdunarodnyye Otnosheniya, 1974, p 84; H. Cheng, "Le Traité de 1967 sur l'espace," p 584; R. Taubenfeld and H. Taubenfeld, "International Implications of Weather Modification Activities," INTERNATIONAL ORGANIZATION, Vol XXIII, No 4, 1969, p 815.

12. N. A. Ushakov, "Fundamental Bases of Cooperation Among States in the Area of Natural Conservation," "Problemy Gosudarstva i Prava na Sovremennom Etape (Trudy Nauchnykh Sotrudnikov i Aspirantov IGPN SSSR)" [Problems of State and Law at the Present Stage (Works of the Scientific Coworkers and Graduate Students of the Institute of State and Law of the USSR Academy of Sciences)], No 7, Moscow, 1973, p 753.
13. J. Sztucky, "International Consultations and Space Treaties," "Proc. XVII Colloq. Law Outer Space," California, pp 147-181.
14. E. G. Vasilievskaya, "Prospects for Legal Regulation of Space Meteorology," SOVETSKOYE GOSUDARSTVO I PRAVO, No 2, 1966, p 71.
15. Yu. Ya. Baskin and A. Yu. Baskin, "International Legal Aspects of the Artificial Modification of Weather," PRAVOVEDENIYE, No 4, 1968, p 106.
16. B. Taubenfeld and H. Taubenfeld, Op. cit., p 830.
17. S. Courteix, "La cooperation internationale dans le domaine de la meteorologie spatiale," LA RECHERCHE SPATIALE, No 3, 1973, p 12.
18. PRAVDA, 27 September 1974.
19. PRAVDA, 26 September 1974.
20. For more detail on this, see: A. I. Ioyrysh and M. I. Lazarev, "Atom i Kosmos" [The Atom and Space], Moscow, Atomizdat, 1965, pp 29-30; G. S. Khozin, "V Zashchitu Planety" [In Defense of the Planet], Moscow, Znaniye, 1974, p 33.
21. In the Soviet-American meetings on this question, see: PRAVDA, 7 November 1974; 7 March 1975.
22. PRAVDA, 23 August 1975.
23. PRAVDA, 28 December 1976. On 18 May 1977, the convention was signed in Geneva by 33 states, including the USSR and United States (IZVESTIYA, 20 May 1977).

CHAPTER 6: INVESTIGATION OF EARTH RESOURCES FROM SPACE

The use of space for studying the natural resources of the earth can be of great benefit to agriculture and forestry, hydrology and oceanography, geology and mineralogy, geography and cartography.¹

For example, in the area of agriculture the task has been set of obtaining regular information on the state of planted areas, pastures, the scope and nature of blights on agricultural plants.

For the geologists space research helps to discover geological structures containing minerals, and to better understand the structural patterns of the earth's crust and the location of mineral and other riches of the earth.

Great opportunities are provided for mapping various characteristics of the earth's surface. This is important because more than two-thirds of the earth's surface has not been covered by reliable and detailed maps.

Hydrologists will be able to more accurately determine the dimensions of areas covered by snow, the moisture content in the soil, and the intensity of rain. Observations from space will make it possible to forecast more precisely the runoff of water after the spring flooding, and this will be of great significance for increasing the harvest yield, for increasing the efficient use of hydroelectric plants, and for combating flooding.

In the area of oceanography, space devices can be used for determining the temperature and state of the sea surface, for mapping sea currents, for observing icebergs, and in the future, for detecting areas of possible accumulations of fish, and for solving other problems.

The return expected from the use of space technology for studying earth is far from exhausted by the given examples. In particular, of great significance is the use of space equipment for monitoring the condition of the environment.

As extensive range of ground, air and space research and experiments must be carried out to elucidate all the potential opportunities for studying nature from space and to work out the methods for such a study.

In the report of the UN working group specially concerned with an examination of the given question, remote sensing from space² is defined as "a method helping to describe the conditions and nature of natural resources, natural features and phenomena and the environment surrounding the earth by observations and measurements carried out from space platforms."³

The remote sensing system, both experimental and operational, consists of space and ground components. The space component includes lofted devices with their photographic, television and metering instruments as well as the equipment for transmitting the information to earth. The ground component consists of stations receiving this information as well as the equipment for its processing, decoding, storage and dissemination.

For the purposes of studying nature, equipment is used which makes it possible to obtain photographic and television images, as well as spectra of the various ground and atmospheric formations in the ultraviolet, visible, invisible and microwave wave bands.

At present experimental work is being done to study nature from space. Here diverse space devices are being employed, including: earth satellites, automatic stations, manned orbital ships and stations. Along with spacecraft, airplanes and ground observation devices are also employed. Only the integrated use of all these devices makes it possible to obtain the most reliable results.

The development of specialized satellites for studying the natural resources of the earth is being carried out in a number of countries. The launching of the first such satellite was made by the United States on 23 July 1972. It was named the ERTS (Earth Resources Technology Satellite), and in 1975, it was renamed the Landsat-1 satellite. On 22 January 1975, the United States launched a second satellite of this series, Landsat-2.⁴

In the USSR, a broad range of experimental work on studying the natural environment has been carried out on the manned orbital spacecraft and stations. Of great significance for working out and improving the scientific-technical methods and devices for studying the earth from space has been, in particular, the flight of the Soyuz-22 spacecraft on which, in September 1976, a new multizonal photographic device developed by Soviet and East German specialists was tested out.⁵

On 9 July 1974, along with the standard meteorological equipment, the Soviet meteor satellite carried into space equipment for studying a number of characteristics of the earth's surface.⁶ Information from this satellite was processed at the USSR Hydrometeorological Center and the state scientific research center for the study of the environment and natural resources.

This marked the beginning to the functioning of experimental, specialized satellites for studying the natural earth resources in the USSR.

The recording of data obtained from the satellites on earth and then the processing and interpretation of the enormous amount of information as yet are beyond the capacity of a majority of states. The absence of skilled personnel able to interpret the obtained information as well as the lack of the specialized equipment needed for data processing do not make it possible for many developing nations even now to use effectively the satellite information, even if it were offered to them.

In this regard, the press of a number of nations has expressed the fear that the earth resource satellites will be used by the monopolies for the purposes of economic espionage.⁷ The legal problems related to the use of information received from space arose in the capitalist nations even in terms of their own territory. The small American companies were concerned that they might be in a disadvantageous position in comparison with the large monopolies which in the competitive struggle can use their ability to process and utilize satellite information on natural resources more efficiently and better. In this regard, the U.S. legal literature has discussed in what manner the rights of the large and small companies to use satellite information on earth resources can be managed.⁸

However of a much more serious nature is the international legal aspect of the given problem involving the obtaining and distribution of information on the natural resources of foreign countries. The urgency of this problem becomes particularly apparent with the threat of the depletion of certain types of natural riches of the earth and the energy crisis which has shaken the capitalist world. Certain American legal experts feel that in addition to moral considerations, the states are not bound by any obligations in terms of the commercial use of information on the natural resources of foreign countries obtained by space means, even in that instance when it is a question of the intention to acquire foreign territory for exploiting its minerals.

The prominent American space law specialists S. Lay and H. Taubenfeld in their book "The Law Relating to the Activities of Man in Space," write: "International law obviously develops in such a manner that it permits a state which has received information (it is a question of space information on foreign territories, authors) to use this information for its own commercial purposes." "In the absence of agreements which provide the transfer of commercial and economic information obtained by space observation it is dubious that any legal obligation would exist to share such information." The authors go on to say that even in the event of concluding an agreement on the acquisition of territory for the purpose of exploiting its minerals the presence of which is indicated by satellite information, "there is no obligation to share such information so that the states would be in an equal position in concluding the contract."⁹

These arguments completely overlook both the principles stated in the 1967 Space Treaty as well as the provisions on the sovereign rights of states to their natural riches reinforced in several resolutions of the UN General Assembly.

The Preamble of the 1967 Space Treaty states that "the exploration and use of outer space should be aimed at the good of all peoples, regardless of the degree of their economic or scientific development." Article I contains the following provision: "The exploration and use of outer space, including the moon and other celestial bodies, are to be carried out for the good and in the interests of all countries, regardless of the degree of their economic or scientific development...."

Even in 1952, the UN General Assembly approved a resolution which proclaimed that "the right of peoples to freely use and exploit their natural riches and resources is an inalienable element of their sovereignty, and conforms to the goals and principles of the UN Charter."¹⁰ This same resolution urged "all states to refrain from direct or indirect actions which would impede the exercising of sovereignty by any state over its natural resources."

Subsequently the UN General Assembly in its resolutions repeatedly affirmed the sovereign rights of states to their natural resources.

Resolution 1803 (XVII) approved 10 years later in 1962, in particular, states:

"2. The exploration and exploitation of such resources and the disposal of them...should be carried out in accord with the rules and conditions which the peoples and nations, upon their own freely taken decision, consider necessary and desirable for permitting, restricting or prohibiting such types of activity.

"7. Violation of the right of peoples and nations to sovereignty over their natural riches and resources contradicts the spirit and principles of the UN Charter, and obstructs the development of international cooperation and the maintenance of peace."¹¹

The authority of these documents in the sphere of the international relations of states is not disputed by anyone. The sovereign rights of states to their natural riches are generally recognized from the standpoint of the doctrine and practice of international law.

The inalienable sovereignty of states to their own natural resources should include the sovereign right of states to dispose of information about these resources.

As was already pointed out, the freedom of research and use of space should not be contrary to the principle of state sovereignty. In the instance examined by us, when the object of research is not space itself but rather the sovereign territories on the earth studied by space means, the observance of this provision is particularly important.¹²

However in modern space law special provisions are lacking which would regulate activities in the area of remote reconnaissance of earth resources.

The task of space law, consequently, should consist in seeking out such methods for a legal regulation of this new type of space activity which, without hindering the development of the given promising area of space development, would prevent the possibility of utilizing the obtained information against the economic interests of the states.

The solution to the posed problem can be achieved by working out the general legal conditions for the space devices themselves by which the natural resources of the earth are studied. As was pointed out above, such work is carried out by specialized earth satellites, by manned orbital spacecraft and stations, and by other space devices the legal status of which varies.

We must also not overlook the fundamental distinctions in the international legal conditions of the component elements of the natural environment and the territories which are subjected to study. It is one thing when it is a question of studying the world's ocean, atmospheric processes for a state's own territory, but something quite different if the territory of foreign states is the object of study. In the first instance no problem of sovereignty arises, and all states have the right to conduct such research and freely dispose of the obtained information (the questions which might arise here have principally a domestic state nature). In the second instance, when the research is carried out over the territory of other states, the sovereign rights of these states to their territory and natural riches can be involved.

On this basis should there be a total prohibition on remote sensing of the earth over the territories of foreign states, without their approval?¹³ It would be possible to point out a number of obstacles which would arise on the path of implementing such a ban. In the first place, the ban would be difficult to realize technically, since this would require the switching off of satellite equipment each time it passed over the territories of certain states. Secondly, it would be virtually impossible to monitor the fulfillment of this ban. And, thirdly, such a ban could create interference in carrying out observations in which all states are interested and related, for example, to environmental conservation and preventing natural disasters.

The solution to the problem can be found in regulating the procedure for using natural resources information obtained by space devices.

Proceeding from the sovereign rights of states to their own natural resources and the provisions of the 1967 Space Treaty, space law should reinforce the principle in accord with which it would be prohibited to use space information on natural resources to the detriment of states which possess these resources. Responsibility for the observance of this principle by all legal and physical entities, on the basis of Article VI of the

Space Treaty, should be born by the states as well as the international organizations engaged in space activities. In this case the states and international organizations would be obligated to make certain that certain types or all information on natural resources located on foreign territories would not be publicized and would not be put into private hands, turned over to third states or international organizations without the agreement of the states which own these natural resources. On the other hand, a state whose territory has become an object of research should have the right to receive information on its natural resources under mutually acceptable conditions.

The legislating of such principles would not create restrictions for a broad study of the natural environment using space means, and at the same time would serve as a legal guarantee against the use of the obtained information against the interests of the states.

At the beginning of 1977, Argentina, Brazil, Venezuela, Canada, Mexico, France, the USSR, the United States and Chile¹⁴ submitted to the United Nations (jointly or separately) official documents related to the international legal regulation of activities in the area of studying ground resources from space.

Since May 1974, the discussion of the legal aspects of remote sensing of the earth from space has been concentrated in the Legal Subcommittee of the UN Space Committee. For a number of years these problems have figured on the Subcommittee's agenda as primary ones.

The 14th and 15th sessions of the Subcommittee (1975 and 1976) worked on the questions of the remote sensing of the earth on the basis of three main documents: the joint draft of France and the USSR, the joint draft of Argentina and Brazil which was supported by Venezuela, Mexico and Chile, and the U.S. draft.¹⁵

It is indicative that the United States which has carried out activities in the area of remote sensing of the earth on the questions of the legal regulation of these activities until most recently has held an exceptionally restrained or more precisely negative position. For a long time this nation has not put forward any of its own proposals, and in discussing the drafts of other states, American representatives have voiced the idea that there is no necessity whatsoever for a legal regulation of the given type of space activity and on the international level the concern should only be for solving organizational and technical questions.

At the 14th Session of the Legal Subcommittee of the UN Space Committee in February 1975, the United States submitted its own working document on the principles of remote sensing. However, this document says nothing of the sovereign rights of states to their own natural riches, nor does it mention any limitations arising from this on the question of the dissemination of the obtained information.

"The most amazing feature," the Dutch legal expert G. Reijnen has noted, "is the fact that the U.S. working document does not even mention sovereignty."¹⁶ Such an approach is no accident. It reflects the U.S. position on the questions of the legal regulation of the studying of earth resources from space.

In carrying out extensive surveying of foreign territories at its own discretion using the Landsat satellites and in making available the thus obtained information on foreign territories to anyone so desiring without any limitations, the United States has endeavored to introduce into international space law a custom in accord with which any information on the natural resources of foreign states would be available without restriction.

The numerous bilateral agreements concluded by the United States with other nations on the work of the Landsat satellites are aimed at this same goal. Evidently the United States intends to view these agreements as a precedent for an overall legal regulation of activities in the area of earth remote sensing. On this question the Bulgarian legal expert M. Marcoff [Markov] has correctly drawn attention to the fact that by itself the conclusion of even numerous bilateral agreements is still not a proper guarantee against possible violations of the legitimate interests of third states.¹⁷

All the drafts submitted to the United Nations by other states emphasize the sovereign right of states to dispose of their natural resources. Here reference has been made to the corresponding resolutions of the UN General Assembly. These drafts proceed from the fact that the right of states to dispose of their own resources imposes definite restrictions on the activities of states, organizations or private individuals to use space devices for studying the natural resources of foreign states or even for using information obtained by such means.

As for the scope and nature of the restrictions stemming from the inalienable right of states to dispose of their natural riches, there are significant differences in the draft submitted on the given question.

The Brazilian draft proposes that activities be banned in the area of remote sensing of natural resources belonging to another state, without the agreement of the latter, having given the states the right to take measures for the purposes of defending their territory against unsanctioned remote sensing activities. This is the farthest reaching restriction of all which have been submitted up to now officially by the states.¹⁸

The draft submitted by France notes that "each state, the territory or waters of which are covered by activities related to remote sensing, should be notified ahead of time by the state, states or international organization which are responsible for carrying out these activities."¹⁹ It has also been proposed that the UN Secretary General be informed of the time, the duration, the nature and the goals of activities in the area of remote sensing of earth resources from outer space.

The Argentine draft raises the idea of delimiting the legal conditions for research and exploitation of natural resources. If exploitation should be carried out exclusively in accord with the national laws and rules, natural resource research from space should be, in the opinion of the authors of this draft, fully internationalized. Although the draft emphasizes the exclusive right of states to their own natural riches, it says nothing of the ensuing principle on the preferential rights of states in relation to the information about these riches obtained using space methods. As was already mentioned, later on Argentina supported the Brazilian draft.

Regardless of the noted discrepancies, a majority of the submitted drafts had a number of common fundamental provisions making it possible to hope for the elaboration of a unified international document which would regulate the legal aspects of studying earth resources from space. An important step in this direction was taken in May 1974, when the USSR and France submitted to the Legal Subcommittee of the UN Space Committee a joint draft of principles regulating the activities of states in the area of remote sensing of earth resources using space equipment.²⁰

In the Soviet-French draft, the emphasis is put on the procedure for using information on natural resources of foreign states obtained in the course of space activities.

Such information should be turned over under mutually acceptable conditions to the state whose territory has been the object of research, and cannot be made public without the clearly expressed consent of the state which owns these natural resources. The documents obtained as a result of activities in the remote sensing area should not be turned over to a third party, be it a government, an international organization or private individual, without the approval of a state whose territory is involved. An exception to this principle is made only in terms of information on natural disasters and phenomena which may cause harm to the environment as a whole.

Like the Soviet draft previously submitted to the United Nations,²¹ the joint draft of the USSR and France proceeds from the fact that the inalienable right of a state to dispose of its natural resources is extended also to information about such resources.

Proceeding from the practical considerations related to the very nature of the space remote sensing equipment, and to the scale of the research being carried out, and also endeavoring to assist as much as possible in developing this promising area of the practical application of space activity, the Soviet-French draft does not provide for the compulsory obtaining of preliminary consent of the states to carrying out activities in the area of remote sensing over their territory.

Here the guarantee against possible abuses, in addition to the already enumerated demands, is the provision according to which each state the territory of which is involved in remote sensing activities for earth resources

can, upon an understanding with the state carrying out remote sensing for earth resources, participate in these activities under equal and mutually acceptable conditions.

The Soviet-French draft stresses that remote sensing of earth resources should be carried out exclusively for peaceful purposes, for the good and in the interests of all countries, with respect for the principle of the sovereignty of states. The results of such activities should help to improve the condition of the environment.

The draft also provides the right of all states, under equal and mutually acceptable conditions, to receive and process data which are the result of remote sensing activities over territories which are outside the limits of the national jurisdiction of any state.

The Soviet-French draft which has synthesized not only the previous provisions of these two countries but also a number of provisions contained in the drafts of other nations is a good base for elaborating an international document which would regulate the legal problems of studying earth resources using space equipment.

The common elements contained in the draft submitted by the various nations made it possible for the Legal Subcommittee of the UN Space Committee in 1976 to formulate a series of legal principles over which general agreement was reached by all subcommittee members.²²

Unfortunately, the principles agreed upon do not encompass such key questions of the legal regulation of remote sensing as, for example, the procedure for disseminating information on foreign territories. Obviously extensive work and talks are still required before the unresolved questions can be agreed upon.

A new aspect which arose at a session of the Legal Subcommittee in 1976 was the attempt to draw a distinction between the primary data, the processed data and the information obtained as a result of an analysis of the data. Such a distinction, in the opinion of the representatives of a number of nations, will make it possible first of all to determine the procedure for disseminating processed data on natural resources, or establish limitations on the dissemination of primary data with a ground resolution above a certain "threshold" expressed in meters. In other words, it is an issue of establishing limitations on the dissemination of not all information on the natural resources of foreign countries, but only certain types of this information.²³

Also of important significance is a clear definition of the concept of "remote earth sensing," since in our view, the subject of regulation should be primarily the remote sensing of earth resources as such, and not the airspace surrounding the earth, although the latter also belongs to the earth resources in the broad sense of this world.

The legal regulation of the use of space devices for studying earth resources is also related to the development and strengthening of equal international cooperation which makes it possible to carry out remote sensing on the basis of an understanding between states (bilateral and multilateral), and also reduces the probability of abuses in the practical use of the obtained information.

Important steps have already been taken toward developing international cooperation in this area. There is a series of bilateral scientific and technical agreements on studying the environment using space devices. Thus, within the general agreement between the USSR and United States on cooperation in the exploration and use of outer space for peaceful purposes, the USSR Academy of Sciences and NASA are conducting joint or co-ordinated experiments to develop methods to study the natural environment from space. In carrying out this work, legal problems have not arisen related to the study of foreign territories, since according to the conditions of the agreement the work is being carried out over the world ocean, and also by each country over its own territory. On the basis of joint developments by Soviet and East German scientists, specialists at Karl Zeiss Jena have developed a complex multispectral camera which is used on Soviet space objects. The interest shown by the other socialist nations in studying earth resources using space methods caused the setting up in 1974 of a special working group of scientists and specialists from the socialist countries within the Interkosmos Program.

As was mentioned, NASA has concluded a significant number of bilateral international agreements on the launching of the Landsat satellites. Scientific collectives and individual experimenters from over 50 nations are participating in the Landsat Program.²⁴ Regardless of the broad international character which the United States has given to this program, the conditions for participating in it have been justly criticized in the world press as incompatible with the principle of state sovereignty.

According to these conditions, any use or publication of the obtained results by the participating nations in the program is prohibited before these results have been given to the NASA Documentation Service. At the same time the United States acquires the right to freely and without restriction to disseminate the obtained information, including information on foreign territories. Even in those instances when the governments of the corresponding nations would wish to prohibit the dissemination of certain data concerning their territories, these data should be turned over to the NASA archives.

On this question the legal adviser of the National Space Research Center of France, A. Tchenonag, wrote in the French Journal LA RECHERCHE SPATIALE: "The aim of such a policy is to ensure a uniform interpretation of results obtained from the ERTS satellite. However its use is incompatible with the principles which should regulate remote sensing, since the United States receives the results of all work carried out over foreign territories

first, and then these results are freely disseminated, and the states to which the corresponding territories belong cannot prevent this. Thus, the sovereignty of states to their own natural riches is ignored."²⁵

The French newspaper LE MONDE wrote on this question: "Governmental organizations financing the work of researchers will be compelled in order not to lose touch with actively developing technology, to accept conditions imposed by the American partner, thereby agreeing to the creation, under the aegis of the American government, the most fantastic means which has ever existed for studying earth resources, the data bank at Sioux Falls."²⁶

The ground stations for receiving information from the American Landsat satellites have been built or are being built in a number of nations including: Brazil, Zaire, Iran, Italy, Canada and Chile.²⁷ Since 1976, the United States has demanded that the nations building ground stations on their territory pay for the right to access to the Landsat satellites (on the order of 200,000 dollars a year). The annual income of NASA from operating the Landsat satellites is about 1 million dollars.²⁸

It goes without saying that the rules unilaterally dictated by the United States for its partners in the Landsat program cannot and should not be viewed as a precedent in working out the international provisions which would regulate remote earth sensing.

The United Nations on a multilateral basis is actively concerned with the questions of international cooperation in the area of studying the natural resources of the earth using space equipment. The beginning to this was made in 1971, when by a decision of the UN General Assembly,²⁹ a working group was set up for remote sensing of the earth using satellites. The group consisting of representatives of all members of the UN Space Committee has worked under the leadership of this committee and its Scientific and Technical Subcommittee.

In 1971-1974, the working group held three sessions (not counting the organizational ones), as well as a series of meetings of its auxiliary bodies which discussed the entire range of questions involved in the international aspect of using space equipment for studying the natural resources of the earth.

Two opposing trends can be seen from the very outset in the activities of the group. Representatives of the socialist countries, a majority of the developing nations and certain capitalist countries (for example France) have noted the necessity of elaborating the legal principles which would regulate activities in the area of remote earth sensing, along with examining and solving the scientific-technical and organizational questions of cooperation. The U.S. representatives and those of a number of other countries have defended the thesis that the elaboration of the legal principles is not an urgent matter, and the solving of organizational questions possibly will make the legal regulation in this area generally unnecessary.

This diversity in the opinions was the reason that the working group was unable to work out any uniform recommendations on the discussed problems. Its final report made in March 1974,³⁰ contained only a list of various opinions and recommendations put forward by the states. As for the possible organizational measures to develop cooperation, the group studied several alternatives which were also reflected in its final report. However, all these alternatives relate solely to the ground portion of the remote sensing system (ground stations, and data processing, storage and dissemination equipment).

Certain states, in particular Sweden, proposed examining the possibility of setting up an international organization under the UN aegis. This organization would finance, own and control the space portion of the system, but this proposal was not further developed since the creation of such a system involved great financial outlays.³¹

The report of the working group analyzed in greatest detail the questions of setting up within the United Nations an international center or centers for receiving, processing, storing and disseminating data from the remote sensing of the earth from space. Such centers are to be set up on a global or regional basis.

Since 1974, the review of these questions has been continued directly within the UN Scientific and Technical Subcommittee for Space. In particular, the UN Secretariat has prepared special research on the possibility of having the United Nations play the coordinating role in future operational activities in the area of the remote sensing of the earth from space.³²

The cautious approach to the questions of setting up extensive international ground technical installations under conditions when the space portion of the system has not yet been organized is completely logical. For this reason, in the first stage of setting up the global or regional centers, it would be advisable to restrict their functions primarily to the questions of an informational and reference nature, as well as to the questions of training personnel, particularly for the developing countries.

However, in the future the essence of the problem will obviously consist in determining who and under what conditions will set up, possess and manage the space portion of the international remote sensing system (the spacecraft and the equipment carried on them). Otherwise the functioning of the entire ground infrastructure will depend upon the goodwill of the state or states which own the space devices.

The solution to all these questions would be significantly facilitated under the condition of putting international activities in the area of studying earth resources from space on an appropriate treaty law basis. The organizational, technical and legal problems in the development of cooperation among states in using space equipment for studying the natural resources of the earth are closely interconnected.

The given considerations make it possible to draw certain conclusions.

The sovereign rights of states to their natural resources are generally recognized from the viewpoint of the doctrine and practice of international law.

From the principle of state sovereignty, there follow restrictions on the use of information concerning the natural resources of foreign states obtained by space equipment.

As yet no special provisions exist which regulate activities in the area of the remote sensing of the earth from space. For this reason the scope and nature of the mentioned restrictions as yet have not been defined by space law.

The elaboration of the provisions of space law on the questions of studying earth resources using space equipment should prevent the possibility of using the obtained information against the economic interests of the states, without creating, at the same time, an obstacle to the development of this new promising area of applying space technology.

The first concern for legal regulation should be to institute a procedure for distributing the remote sensing data containing information which touches upon the sovereign rights of states to their natural resources.

Legal regulation of remote sensing of earth resources using space equipment is linked to the development of equal international cooperation. Over the next few years a mechanism should be elaborated for multilateral cooperation in this area.

FOOTNOTES

1. B. V. Vinogradov and K. Ya. Kondrat'yev, "Kosmicheskiye Metody Issledovaniya" [Space Methods of Earth Sciences], Leningrad, Gidrometizdat, 1971; B. Z. Sagdeyev, "The Study of Earth from Space," *ZENITYA I VSELENNAYA*, No 3, 1977, pp 4-8.
2. The term widely used in UN practices for studying the natural resources of the earth using space equipment.
3. "Report of the Working Group on the Questions of Remote Sensing of the Earth Using Satellites on the Work of Its Third Session," UN Doc. A/AC.105/125 of 13 March 1974, p 4.
4. H. M. Matté, "Droit aérospatial." Paris, 1976, p 149.
5. B. Petrov and K. Grote, "Along the Path of Integration," PRAVDA, 29 September 1976; "Space--The Arena of Cooperation," PRAVDA, 30 September 1976.

6. FRAYDA, 11 July 1974.
7. See, for example: "Les USA feraient de l'espionnage économique par satellites," AIR ET COSMOS, No 270, 1968, p 18; FLIGHT, Vol 94, No 3098, 1968, pp 140-144; AEROSPACE DAILY, 3 March 1970, p 10, 6 March 1970, p 37; CHRISTIAN SCIENCE MONITOR, 2 December 1970, and so forth.
8. D. J. Alexander, "Two Emerging Problems of Space Law Concerning Remote Sensing Satellites," "Proc. XII Colloq. Law Outer Space," California, 1970, pp 258-263.
9. G. H. Lay and H. J. Taubenfeld, "The Law Relating to Activities of Man in Space," Univ. Chicago Press, 1970, pp 187-188.
10. UN General Assembly Resolution 526(VII).
11. See also the UN General Assembly resolutions 1314(XIII), 1958; 2158(XXI), 1966; 2336(XIII), 1968; 2600(XXIV), 1969; 2692(XXV), 1970; 3016(XXVII), 1972; 3171(XXVIII), 1973; and 3281(XXIX), 1974.
12. On the relationship of the principles of freedom of research and the use of space and state sovereignty in terms of the designated problem, see: A. Tchernomog, "A t616detection des ressources terrestres par satellites," LA RECHERCHE SPATIALE, No 3, 1973, pp 1-5.
13. Such a proposal is contained in the draft submitted to the United Nations by Brazil (UN Doc. A/AC.105/122) and the Joint Argentine and Brazilian draft (UN Doc. A/C.1/1047 of 15 October 1974).
14. The drafts of Argentina, Brazil, France and the USSR, as well as the Joint Soviet-French working document can be found in Appendix IV to the Report of the Legal Subcommittee on the Work of Its 13th Session (4-13 May 1974) (UN Doc. A/AC.105/133 of 6 June 1974). The Argentine-Brazilian draft which Venezuela, Mexico and Chile supported at the 14th Session of the Legal Subcommittee can be found in UN Doc. A/C.1/1047. The U.S. working document is in UN Doc. A/AC.105/C.2/L.103 of 19 February 1975.
15. UN Doc. A/AC.105/147; A/AC.105/171.
16. G. C. M. Reijnen, "Remote Sensing by Satellites and Legality," "Legal Implications of Remote Sensing From Outer Space," Sijthoff--Leyden, 1976, p 27.
17. M. Marcoff, "Traité de Droit international public de l'espace," Fribourg--Geneva--Paris--New York, Ed. Univ. Fribourg. Suisse, 1973, p 570.

18. Analogous formulations are contained in the joint proposal of Argentina and Brazil which was supported by Venezuela, Mexico and Chile (A/AC.1, 1047).
19. UN Doc. A/AC.105/L.69, Point 4.
20. UN Doc. A/AC.105/C.2/L.99 of 27 May 1974.
21. "Rough Draft of Principles for the Use of Space Equipment by States for Studying Earth Resources" was submitted by the Soviet delegation at a session of the UN working group on remote sensing of the earth using satellites on 18 April 1973 (UN Doc. A/AC.105/C.2/L.88). The basic provisions of this document were incorporated in the joint USSR and French draft.
22. UN Doc. A/AC.105/171 of 28 May 1976.
23. An analogous consideration was raised by the Soviet delegation at a session of the Scientific and Technical Subcommittee in 1977 (UN Doc. A/AC.105/C. I/L. 96).
24. "Legal Implications of Remote Sensing from Outer Space," p 148.
25. A. Tchernonog, "A télédétection des ressources terrestres par satellites," LA RECHERCHE SPATIALE, No 3, 1973, p 4.
26. LE MONDE, 26 September 1973.
27. "Legal Implications of Remote Sensing from Outer Space," p 148.
28. SPACE FLIGHT, Vol 18, No 6, 1976, p 221.
29. Resolution of the UN General Assembly 2733(XXV) of 16 December 1970 and 2778(XXVI) of 29 November 1971.
30. UN Doc. A/AC.105/125 of 13 March 1974.
31. According to calculations made in the United Nations in 1970, the full cost of an operational system would be 430 million dollars, of which 143 million would be for the space portion of the system and 287 million for the ground (UN Doc. ECO/SOC E/4779, 4 November 1970).
32. UN Doc. A/AC.105/154 of 9 January 1976 and A/AC.105/154, Add. 1 of 15, October 1976.

CHAPTER 7: THE LEGAL STATUS OF INTERNATIONAL ORBITAL STATIONS

The development of permanent orbital stations on which man can live and work for an extended time in space is viewed as an important promising area of astronautical development. The first experience in developing such a station was acquired during the 6-month operation of the Salyut scientific station which was put into a near-earth orbit on 19 April 1971. For 24 days a heroic crew consisting of the cosmonaut pilots G. T. Dobrovolskiy, V. N. Volkov and V. I. Patsayev worked on this station.¹ In subsequent years, the USSR has continued to develop and orbit stations of the Salyut type and these have operated for an extended period both under automatic and manned conditions. In 1973, the United States launched its first Skylab orbital station with a changeable three-man crew.

The permanent orbital stations make it possible to carry out various scientific, technical and national economic tasks. Astronomers and meteorologists, geologists and oceanographers, biologists and medical workers, as well as scientists and practical workers in other areas have placed great hopes on the possibilities of conducting extended and systematic observations and experiments in near-earth orbits.²

Although the first stations were designed primarily for conducting scientific research, in the future they will be used more and more widely for studying earth resources, for weather prediction, for controlling the environment, for working out new production processes and for solving other national economic problems.³ The orbital stations will become an important means for developing new earth-oriented space systems and for complementing already existing ones.

A number of international organizations, for example the International Astronautical Academy, for many years has been concerned with the theoretical elaboration of problems related to studying the possibility of creating international orbital stations or laboratories.⁴ Among the other problems, the legal questions which might arise in carrying out such programs have also been discussed.

After carrying out the Soviet-American Soyuz--Apollo Project, these problems have moved from the theoretical area into the sphere of the practical activities of states.

In actuality, during one of the stages of the experimental testing of the compatible equipment for the rendezvous and link-up of the manned Soviet and American spacecraft and stations, and precisely during the period of the 2-day joint flight, the single system of Soyuz and Apollo spacecraft represented a sort of international orbital station. This was the first, although brief, experiment in the existence of an international manned space system in a near-earth orbit.

In the greetings of L. I. Brezhnev to the crews of the Soyuz-19 and Apollo craft, it was pointed out that Soyuz and Apollo are the prototype of future international orbital stations.⁵

The Spacelab being developed by the Western European nations, along with the American recoverable transport spacecraft to be used with it can also be viewed as an unique international orbital station.

The Soviet proposal for the participation of citizens from socialist countries in the manned flights on Soviet spacecraft and stations was a new important step on the way to the development of international orbital stations. From 1978 through 1983 the nations of all the socialist countries at work on the Intercosmos Program will participate jointly with Soviet cosmonauts in manned flights.⁶

In this regard of significant interest, no longer just theoretical but also practical, is the legal status of the international orbital stations.

What problems could arise in the event of the creation of permanent international orbital stations? Will their legal conditions differ from the general conditions of space objects as established by current space law? How were these questions settled during the experimental flight of the Soyuz and Apollo craft, and how are they to be settled in the future?

The first difficulty which arises in examining the posed questions is a purely terminological one. In astronautics and space law as yet there are no generally accepted definitions of a space laboratory or space station, and in the literature these terms are sometimes used for designating the most diverse space devices, including the automatic earth satellites. Moreover, as is known, in international space law there also are no generally accepted definitions of space and space objects.

Naturally it would be difficult to answer the question of whether or not a particular legal status exists for international orbital stations without possessing definitions for such a station, a space object and space itself. This has not been elucidated either in the course of discussing the legal status of orbital stations at a number of international colloquiums on space law.⁷

In terms of the given research, by an international orbital station one may understand a space complex developed or used by two or more states and which for an extended time can operate in a near-earth orbit under manned and automatic conditions, and is designed for carrying out scientific, technical and national economic tasks.⁸

The given definition emphasizes such elements as the international nature of the station, the missions carried out by it, the presence or the possibility of the presence of a crew, the extended functioning, the orbiting around the earth, and technical complexity in comparison with other space objects.

The station can acquire an international character due to various factors, including: the creation of the station by several states within the framework or outside of international organizations, the providing of opportunities on a national station for carrying out experiments or production processes by foreign specialists, the incorporation of foreign cosmonauts as crew members of a national station, and so forth.

As a rule, a permanent station in a near-earth orbit presupposes the presence of periodically changed crews. However, as experience shows, such stations can operate for an extended time under automatic conditions. Depending upon their purpose, the stations can also be developed as unmanned.

Orbital stations can consist of individual modules for varying purposes assembled on the ground or directly in space. They are linked with the earth by a transport system for replenishing supplies and changing the crews.

From the given definition it follows that we are excluding from the review the international stations which could be created in orbits around the moon, other planets or directly on these celestial bodies.

Now let us examine on the general theoretical level, as well as in terms of the specific Soyuz--Apollo and Spacelab programs, the most characteristic features of the legal status of international orbital stations.

Implementation of "Jurisdiction and Control." Article VIII of the Space Treaty provides that a state which has registered an object launched into outer space "keeps jurisdiction and control over such an object and over any crew of this object while they are in outer space...." The rights of jurisdiction and control mentioned in this article of the Treaty in their nature represent sovereign rights exercised by a state in relation to its space object and its crew while they are in space to which territorial sovereignty of any state is not extended. Certain authors qualify such rights of a state in outer space as "quasiterritorial jurisdiction."⁹

The sovereign essence of the rights and obligations of a state stipulated in Article VIII of the Treaty is affirmed by the history of the elaboration

of this article. The Soviet draft of the declaration of basic principles regulating the activities of states in the exploration and use of outer space, in underlying the corresponding declaration approved by the UN General Assembly and subsequently the Space Treaty, states that a state maintains its sovereign rights to the objects which it launches into outer space.¹⁰

Although subsequently the texts of the declaration and the Treaty used the words "jurisdiction and control" instead of the words "sovereign rights," this has not altered the sense which the agreeing parties invested in the content of the given concept. The American doctrine, in particular, uses the concept "jurisdiction" in terms of the cases examined by us in the sense of the ability of a state "to prescribe the provisions of the law or force their execution."¹¹ The sovereign nature of the rights of a state to its space objects has been noted by a number of American legal experts.¹²

In examining the content of the term "jurisdiction and control," the Hungarian legal expert G. Gál has written that the important component elements of jurisdiction and control are the right to prescribe laws, decrees and the general legal procedure which should be followed by people on a spacecraft, as well as the exclusive right to control the actions of the space object.¹³

In terms of manned orbital stations the provisions of the Treaty on jurisdiction and control imply that the law of the registering state is used on the station, that the civil law and criminal law questions arising on the station should be settled in accord with the national law of this state, and it has the right to control the station and the actions of its crew.

Of great significance is the provision of the Treaty that the jurisdiction and control of the registering state apply to any crew of the space object, that is, if it is an international crew, it, regardless of the citizenship of its members, should obey the laws and legal procedures of the registering state "if a special understanding on a different procedure is not in effect."

One is struck by the fact that the Space Treaty does not say anything about registration as the basis for the occurrence of the rights of jurisdiction and control. It merely stipulates the "maintaining" of these rights for the registering state while the space object is in space. In this manner the Treaty tacitly proceeds from the assumption that with joint space activities the states themselves should agree on the procedure for implementing their jurisdiction and control, bearing in mind that in the absence of such understanding these functions are assumed to be with the registering state.

In this sense the act of registration in the treaty is given preference in comparison with all the other possible bases, including: right of ownership, citizenship of the crew members, the launching place of the object, the place the object or its scientific equipment was developed, and so forth.

It must not be overlooked that legal relationships with third states (for example over the question of liability for damage caused by a space object or related to rescue operations) could arise not only for the registering state but also for all other participants in the joint space activity, since the space agreements in these instances mention not the registration state or the state carrying out jurisdiction and control, but rather the "launching state" and the "powers carrying out the launch."

Joint activities whereby the right of ownership to the space object may be with one state, the right of ownership to the launch vehicle to another, the launch may be carried out on a third state and the crew may be made up of citizens from several states inevitably involve the appearance of competing jurisdictions.

While the Space Treaty tacitly proceeds from the possibility of an understanding between the states on carrying out jurisdiction over an international space object and its crew, the Convention Governing the Registration of Objects Launched into Space directly provides such a possibility. Article II of this Convention mentions agreements "which are concluded or can be concluded between launching states on the question of jurisdiction and control over the space object and any of its crew."

Thus, in launching an international orbital station, the rights of jurisdiction and registration do not unfailingly belong to the same state. The possibility of competing jurisdictions in relation to international orbital stations can necessitate a special agreement on these questions between the participants of the joint activities. The necessity of an understanding on jurisdiction and control may also arise in relations with third countries, since the current provisions of international space law leave open the question of jurisdiction and control during the period that the space object passes over the airspace of other states or when it lands on their territory.

In carrying out brief joint space flights, the problems of jurisdiction and control do not present serious difficulties, and the understanding of states is basically focused on the questions of controlling the joint flight and maintaining general order and discipline among the members of an international crew.

Thus, in preparing for the joint flight under the Soyuz--Apollo Project, the parties agreed that when the cosmonauts moved from one ship into another in accord with the preset work schedule, the actions of the crew on board the corresponding ship would be under the ship's commander and the ground control center of that nation to which the given ship belonged. The technical flight directors and the leaders of the control centers worked out in detail and approved flight documents which provided for the behavior of the ships and the crews during all regular and irregular situations.

Responsibility for decision taking during irregular situations was entrusted to the control center and the commander of the "receiving side,"

that is, the ship in which such a situation arose while the cosmonauts of the other side were in it. The right of taking an immediate decision in the absence of contact with ground personnel was given to the commander of the receiving ship.

The question of what state would provide jurisdiction and control over Spacelab while it was in space has still remained open. In the Western literature the viewpoint has been voiced that such a right should belong to one of the ESRO member nations or to the organization itself.¹⁴ However, considering that Spacelab will be an inseparable part of the American transport spacecraft until it returns back to earth, it is difficult to conceive that the Western European nations will succeed in agreeing with the United States on the exercising of such functions. In the event of the granting of such competence to the European nations, jurisdiction should be carried out by one of the nations, since the international organization cannot possess sovereign rights.

The importance of the jurisdiction questions will rise as the number of cosmonauts simultaneously on board a station rises and as the duration of the time spent in space increases. As is known, even now plans are being discussed for super-large multipurpose orbital stations designed for a crew of up to 100 and more persons. The carrying of such a number of persons on board the station naturally requires the elaboration of a definite internal regulation which should be followed by the station's collective, as well as a precise definition of the competence of the states in terms of reviewing civil law, criminal law and other questions which may arise in the relationships between the members of such a numerous collective.¹⁵

Registration. The Space Treaty mentions only the national registration of space objects, that is, the entry of such objects in the register of any state. And national registration before the Convention Governing the Registration of Objects Launched into Outer Space came into force remained elective.

Initially the procedure of international registration of space objects, in being carried out on the basis of data voluntarily submitted to the UN Secretary General, was established by the Resolution of the UN General Assembly in 1961.¹⁶ In accord with this Resolution, the states periodically informed the UN Secretary General in writing of space objects launched by them into outer space. The Department for the Questions of Outer Space Under the UN Secretariat kept an official register in which this information was entered. Copies of the letters received by the Secretary General were sent out to all UN members.¹⁷

In the case of international launches, information was provided by one of the states participating in the joint space activity. Thus, the launchings of satellites in the intercosmos series were registered at the United Nations by the USSR; the launchings of the ESRO satellites were registered with France.

The new Convention Governing the Registration of Objects Launched into Outer Space which came into force on 15 September 1976 introduced compulsory national registration of space objects which were launched "into orbit around the earth or further into outer space" (Article II). The keeping up of the national register and the conditions for keeping it were determined by the state itself. As for international registration, this had the nature of a general centralized accounting of information provided by the states to the UN Secretary General "in the immediate practically feasible period" (Article IV). The Convention established a minimum amount of information on the objects which was to be provided by the states in the United Nations, and also regulated other questions involved with the registration of space objects.

As was pointed out above, the national registration of space objects can entail definite legal consequences. In the absence of an understanding about this, the Space Treaty links the jurisdiction and control functions to registration. Article V of this same Treaty demands the return of cosmonauts who have made a forced landing to the state with which their spacecraft is registered. Space objects and their component parts are also to be returned to the registering state (Article VIII). The Rescue Agreement, having established the obligation to return cosmonauts and space objects "to the authorities who carried out the launch," has not abrogated these articles of the Treaty. It is essential to mention that the responsibility of states for national activities in space (Article VI of the Treaty) also presupposes the possibility of reference to registration as to the grounds for establishing to which state the space object belongs.

For this reason, without exaggerating the role of the active registration in space law which, in contrast to maritime and air law, does not automatically entail the assigning of "nationality" to a spacecraft,¹⁸ it is essential to recognize the serious legal significance of this act. In terms of the sense of the Registration Convention and from practical considerations, instances of multiple registration, that is, the entry of the same object into the national registers of several nations, should be excluded. The Convention stipulates that in the launching of a space object by several states "they should jointly determine which of them is to register this object."

The situation is more involved with the launching of an object by an international organization. Article VII of the Convention states that the concept of a "state" according to the Convention, with the exception of certain articles, encompasses any international intergovernmental organization which engages in space activity, if it assumes the rights and obligations stipulated by the Convention, and if a majority of its members are participants of the Convention and Space Treaty.

In practical terms this means that the Convention allows the possibility for an international... intergovernmental organization to keep its own registration of space objects launched by it or the transfer of such functions

to one of the member states. In the former instance, however, in parallel with the establishing of the organization's own register, its members should reach an agreement as to which of them will carry out jurisdiction over the space objects launched by the organization, since the organization itself cannot be given such rights.

The Registration Convention does not institute a special registration procedure for one or another class of space objects. At the same time, the registration of orbital stations has its particular features.¹⁹ Obviously the detachable modules and elements of the station which are capable of existing independently in a near-earth orbit, like the transport spacecraft, should be registered along with the station itself. This provision applies even more strongly to those instances when the autonomous modules of the station or the transport spacecraft flying to it belonged to different states or international organizations.

In carrying out the flight under the Soyuz--Apollo Project, the Soviet and American spacecraft were launched and returned to earth independently. During the period they remained in near-earth orbits, for a larger portion of the time they flew as separate space objects. For this reason it is natural that each of these ships was registered in its own country.

Of certain theoretical and practical interest is the question of the registration of the Western European Spacelab. As was already pointed out, during the first flights of the American transport spacecraft, the Spacelab module developed in Western Europe from the start to the end of the flight will be inside the American spacecraft. For this reason it is impossible to agree with the viewpoint of the West German legal expert, von Preuschen, that the flight module and the ship in legal terms represent autonomous space objects and should be registered separately.²⁰ In the future, if it is technically possible to realize the possibility being presently discussed of the independent mission of Spacelab in a near-earth orbit, after being delivered there by the transport spacecraft, Spacelab could be viewed as a separate space object. With the present flight conditions, it is an inseparable component of an American space object.

With the corresponding understanding between the United States and its European partners, registration in one of the European nations is possible only for the entire system as a whole, including the Spacelab space ship. In practical terms this may be advisable in the instance when in the future a Spacelab will be launched by the United States specially upon order of the Western European nations or an international organizations.

International liability. In considering the protracted existence and diverse nature of the functions carried out by international orbital stations, the questions of international liability related to legal violations or material harm caused as a result of legitimate activities can assume great significance.

Liability in international space law has been interpreted from public law positions. It regulates legal relationships of liability between states and, under certain conditions, between intergovernmental organizations, on the one hand, and states, on the other, but not between legal and physical entities or between states and such entities.²¹

In those instances when the legal or physical entity is the injured party or the party causing injury, their interests in international liability relationships, according to the current provisions of international space law, are represented and defended by definite states. These provisions correspond to the principles of sovereign equality of states and to the particular significance which states give to the research and use of outer space.

The Convention Governing International Liability for Damage Caused by Space Objects, in regulating in detail the liability relationships, has specially defined that its provisions are not to be applied to instances of damage caused by a space object of a launching state to citizens of this state and to foreign citizens during that period they are involved in operations related to this space object (Article VII). This means that the liability relationships for damage covered by the Convention are not to be extended to the participants of a joint launch or to an international crew on board an orbital station.

The liability relationships between the participants of joint space activities, with certain exceptions, are outside the sphere covered by the provisions of international space law. In carrying out long-range space projects, such relationships should be covered by special agreements between the participant nations.

However, these agreements cannot abrogate the mandatory provisions of international space law concerning the liability for third states.

The most important among such provisions is the principle of solidary liability for any damage caused in carrying out a joint launch by two or more states (Point 1 of Article V of the Convention Governing Liability for Loss). Point 2 of the designated clause specially stipulates that agreements concluded between the participants of a joint launch cannot jeopardize the rights of a state which has suffered loss to demand full compensation for the damage caused by any of the launching states or all the launching states who bear solidary liability.

The Convention differentiates two types of joint activity whereby such liability may arise: within international, intergovernmental organizations and outside such limits.

If the damage has been caused by an international orbital station launched by an intergovernmental organization, then the organization itself and its member states bear solidary liability. However, here any claim for

compensation is submitted first to the organization. If the latter within 6 months has not paid compensation, the plaintiff state can raise the question of the liability of the member states of this organization (Article XXII).

With a joint launch outside an international organization, a demand to recover losses can be submitted immediately to any state which falls in the category of a "launching state," and the latter is obliged to provide full restitution for the damage caused; this does not exclude its right for a retroactive demand on the remaining participants in the joint launch.

If the damage has been caused to the property of an organization (for example, its orbital station), it in this manner becomes the authorized party, then the demand to pay compensation for damage is submitted not by the organization itself but rather by one of its member states (Article XXIII, Point 4). By this one understands that the members of the organization should determine which will act on their behalf and how the obtained amount of compensation will be allocated subsequently.

International liability is not lifted from a state in an instance when the orbital station is created by private organizations. Article VI of the Space Treaty establishes the international liability of a state for space activities regardless of whether this is carried out by governmental bodies or by nongovernmental legal entities, and obliges the states to make certain that the activities of nongovernmental legal entities in space be carried out with the permission and under the constant supervision of the corresponding state.

The Convention on liability has introduced into space law the principle of so-called absolute liability for damage caused by a space object on the earth's surface or to an aircraft in flight. By "absolute liability" one understands liability without the fault of the responsible party.

However, fault, as the basis of liability, is maintained in the event of causing damage by one space object to another space object or to persons and property on board such objects. In these circumstances, a state bears liability only in the instance that "damage was caused due to its fault or to the fault of persons for which the state is responsible" (Article III). This provision can be of important significance for the activities of international orbital stations, since their extended stay in orbit entails repeated delivery flights, maneuvers and docking of the spacecraft which bring personnel, food and equipment.

The establishing of the principals of solidary liability is of great significance with the occurrence of liability relationships involving damage caused as a result of the activities of an international orbital station, as well as in any joint space activities.

The Convention puts the launching state in the category of liable principals, giving a broad interpretation to this concept. Moreover, the Convention specially stipulates that "a state from whose territory or unit a space object is launched is viewed as a participant in the joint launch."

Thus, in the launching of Spacelab by an American transport ship, regardless of the legal possession of Spacelab and the internal agreements between the participants in the project, the United States, as one of the launching states, would be among the principals of solidary liability. In accord with the intergovernmental agreement between the United States and the Western European nations, the parties agreed to consult immediately among themselves on a just allocation of expenditures which they would bear in the event of solidary liability for damage caused to third states.²²

The presence on board an orbital station of a citizen or citizens from a state which has not taken a direct part in the development and launching of a station obviously also gives grounds in liability questions to consider this state among the launching ones and thereby bearing solidary liability. Such a construct is particularly valid when the damage has been caused due to the fault of the citizen of the given state.

Finally, in determining the range of the principals in liability relationships, in particular in those instances when it is a question of international liability in the broad sense of this word and not merely financial liability, one must not overlook that jurisdiction and control over a space object and over any crew of this object while they are in space are maintained by the state where the given object is registered (Article VIII of the Space Treaty).

The liability relationships with joint space activities presupposes a multiplicity of principals bearing solidary liability for the damage caused by a space object, and, as a rule, require special regulation of the liability questions among the participants of the joint activities, without infringing the legitimate interests of third countries in so doing.

Rights of Ownership. Article VIII of the Space Treaty stipulates that ownership rights to space objects and their component parts remain inviolable while they are in outer space, on a celestial body or upon return to the earth. In other words, space objects and their components while in space and after their return to the earth belong to those states, legal or physical entities to which they belonged prior to the flight.²³

International space law does not go into the question of how ownership relationships for space objects and their component parts are regulated among the participants of joint space activities, leaving this to the discretion of the agreeing parties.

The question of the right of ownership to international space stations and their components can be settled differently, depending upon the understanding among the concerned states.

In carrying out the Soyuz--Apollo Project, the given question did not arise, since during the entire flight and after its completion the states fully maintained the right of ownership to their ships. This project did not envisage any financial payments between the countries.

In accord with the internal agreement between the Western European countries and ESRO, the owner of the first flying model of Spacelab would be ESRO (presently, respectively, the European Space Agency). This model was to be turned over gratis to the United States. It is not excluded that at the same time the right of ownership would be transferred to the United States. The owners of the subsequent flying models could be either the United States or their European partners, depending upon under whose order these models would be manufactured. In those instances when Spacelab would be developed for the needs of the Western European nations, the rights of ownership could belong to an international organization, to one or several countries, or to their legal entities. The flight of Spacelab as part of an American transport craft, in accord with Article VIII of the Space Treaty, does not alter the ownership status.

Rescue Operations. The Rescue Agreement stipulates that cosmonauts and space objects are to be returned "to the authorities carrying out the launch." Article VI of the Agreement explains that this term applies to the state or international organization responsible for the launching, under the condition that this organization declares its willingness to accept the rights and obligations provided by the Agreement, and that a majority of the member states of this organization is participants of the Rescue Agreement and Space Treaty.

The duties provided by the Agreement for states in the area of the rescuing and return of crews differ from their duties in the area of the rescue and return of space objects themselves. The states should take every possible measure to rescue and provide the necessary help to the crew of a spacecraft which has landed on foreign territory as a result of an emergency, a disaster, a forced or unforeseen landing. Such a crew is to be immediately turned over to the representatives of the authorities who made the launch. The very space objects and their components are to be salvaged and returned to the authorities who made the launch only upon the request of the latter and at their expense.

The 1963 Space Treaty also provides an obligation when necessary to provide all possible mutual aid by cosmonauts of different states while they are directly in space or on other celestial bodies (Article V).

For the practical realization of these obligations and for ensuring the technical possibilities of carrying out rescue work in space, of the greatest significance is a solution to the question of international standardization or compatibility of the docking mechanisms on the spacecraft and orbital stations. Otherwise the provisions of the Treaty on carrying out rescue work by different states directly in space may remain merely good intentions.

"Mutual aid in space," writes the Corresponding Member of the USSR Academy of Sciences K. D. Bushuyev, "is virtually impossible if the ships are not equipped with the required facilities for locating, rendezvousing and docking, if it is impossible to move from one ship into another in order to provide technical aid or, if need be, take the other crew into your ship."²⁴ For precisely this reason the understanding between the USSR and United States on developing compatible equipment for the rendezvous and docking of spacecraft and stations and the successful testing of this equipment under the conditions of a real space flight in the Soyuz--Apollo Project were of such great significance.

The Right of Visitation. In accord with Article XII of the 1967 Space Treaty, all stations, units, equipment and spacecraft on the moon or on other celestial bodies are open to the representatives of other states on the basis of reciprocity and in observing definite conditions (preliminary notification). An analysis of this and other articles of the Treaty provides reason to assume that such a right can be interpreted broadly and recognized also for manned stations in orbit around the earth. This opinion is shared by a number of space law specialists.

In examining the question of the "right of visitation" in terms of Spacelab, the West German legal expert von Preuschen has pointed out that "any visit on a space object not based on a celestial body creates a serious threat to its safety and normal operation and this could involve a fatal danger for the crew."²⁵ Von Preuschen writes further that "a visit to an orbiting space laboratory would require complex preparatory work which should be carried out jointly with the concerned states."²⁶

The French specialist Stoebner in a paper devoted to the legal and technical problems of space stations presented by him at the International Astronautics Congress in Amsterdam 1974, emphasized that for obvious technical considerations a visit should be dependent upon the receiving of preliminary permission.²⁷ An analogous position is supported by the American legal expert J. Tamm,²⁸ the Austrian legal expert E. Fasan²⁹ and many other representatives of space law science who have studied this question.

In the event that a state desires to send its cosmonauts to an orbital station belonging to another state or to a group of states, preliminary permission of the latter must be obtained. The Space Treaty also does not permit the use of orbital stations for inspecting automatic space devices without the agreement of the states to which they belong.

The Purpose of an Orbital Station. The purpose of the space object and the mission assigned it play an important role in the legal characteristics of any space object, including an international orbital station.

Permanent orbital stations can carry out multipurpose scientific-technical and applied functions, however here a certain specialization of the orbital stations should not be excluded. Thus, among the work which probably will be carried out in the future flights of Spacelab, in addition to scientific

experiments, mention has been made of earth observations, communications, navigation, the manufacturing and process of materials.³⁰ Naturally, specialized legal conditions which are being presently worked out for a number of types of space applications will be fully extended to the international orbital stations used for these purposes.

The American press has published statements that the United States is discussing plans to develop in the 1980's stations for carrying out various production operations. This station would be rented to the industrial firms and later turned over fully as their property.³¹ Such use of orbital stations requires a special intragovernmental and possibly also international regulation. Here the leasing of the station or the transfer of it as the property of private firms cannot eliminate the mandatory provision of international space law according to which states bear international liability for space activities, regardless of whether these activities are carried out by governmental bodies or by nongovernmental legal entities.

An unique legal status will also be characteristic of the international orbital stations if in the future they are used as launching platforms for interplanetary flights or as intermediate bases for the return of spacecraft which have visited other planets.

The purpose of a space object plays an important role for its legal qualification also due to the fact that the freedom of space activities for states, as has already been repeatedly noted, is not unlimited. The use of new technology should not lead to a violation of the principles and provisions of international law generally and international space law, in particular. Space activities which are contrary to these principles and provisions should be recognized as illegal.

In the development and operation of international orbital stations, in addition to the examined questions, a whole series of other legal ones may arise.

Experience shows that the carrying out of projects to develop international orbital stations, considering their scale, cost and political significance, requires the conclusion of special intergovernmental agreements, as well as agreements which develop and supplement them between the organizations directly involved in their fulfillment. In the event of the Soyuz--Apollo Project, this involved the intergovernmental agreement between the USSR and the United States of 24 May 1972, as well as a series of agreements and understandings between the USSR Academy of Sciences and NASA. In the event of the Spacelab Project, there were the intergovernmental agreement of the Western European nations and the United States of 14 August 1973, the agreement between ESRO and NASA of 24 August 1974, and other documents. The general principles and provisions of international space law supplemented by the provisions contained in such agreements regulate the relationships between the participants of a joint project and the legal status of the international orbital station.

Permanent stations, including international ones, will be set up in several stages, and in the first stages stations of a narrower purpose will be used, with small crews and a relatively short period of existence.³²

The legal status of an international orbital station will have both traits inherent to all space objects as well as certain particular features. The common traits are determined by current international space law the provisions of which are extended to an international orbital station as one of the space objects. The specific features of the legal status derive mainly from the international nature of the station, the placing of it in orbit around the earth, and its purpose.

The international nature of an orbital station may necessitate the concluding of a special agreement or agreements between the participants in the specific project on questions relating to jurisdiction, registration, liability for damage, ownership rights and other questions.

The purpose of the international orbital station and the functions carried out by it may be of decisive significance for defining its international legal status. Undoubtedly, such stations should be set up and employed exclusively for peaceful purposes, for the good and in the interests of all people in the world.

In accord with the Peace Program which gained new affirmation and development at the 25th CPSU Congress, the USSR is working so that international cooperation in space, in being an important component in scientific and technical cooperation among states, has a positive influence on the strengthening of confidence between states, and serves the cause of peace and progress for mankind.

FOOTNOTES

1. "'Salyut' na Orbite (Osnovy Konstruktsii Orbital'noy Stantsii 'Salyut', Etapy yeye Poleta i Materialy Nauchnykh Issledovaniy)" [Salyut in Orbit (Bases for the Design of the Salyut Orbital Station, the Stages of Its Flight and the Materials of Scientific Research)], Moscow, Mashinostroyeniye, 1973.
2. B. N. Petrov "Orbital Stations and the Study of the Earth from Space," VESTNIK AKADEMII NAUK SSSR, No 10, 1970, pp 15-30.
3. R. Sagdeyev, "For Worldwide Cooperation in Space," NOVOYE VREMYA, No 39, 1975, pp 21-23.
4. "Orbital International Laboratory and Space Sciences. Conference Proceedings," New Mexico, 1969.
5. PRAVDA, 18 July 1975.

6. PRAVDA, 17 July and 14 September 1976.
7. "Introductory Report and Comments on Legal Status of Earth-Orbiting Stations," "Proc. XII Colloq. Law Outer Space," California, 1970, pp 93-98.
8. For other definitions of international orbital stations, see: A. I. Rudev and V. G. Emin, "Near-Earth Manned Space Stations," SOVETSKOYE GOSUDARSTVO I PRAVO, No 4, 1972, p 112; A. W. Stoebner, "Stations spatiales presentes et futures: technique et droit," "Proc. XVII Colloq. Law Outer Space," California, 1975, pp 320-321.
9. B. Cheng, "Le Traité de 1967 sur l'espace," JOURNAL DU DROIT INTERNATIONAL, No 3, 1968, p 570.
10. UN Doc. A/AC.105 C.2/L.6 (Article 8).
11. C. Q. Christol, "The International Law of Outer Space," Washington, 1966, p 416.
12. See, for example, S. H. Lay and H. J. Taubenfeld, "The Law Relating to Activities of Man in Space," Chicago, 1970, p 52; S. Gorove, "The Future of Space Law: A Legal Regime for Space Colonies," "Proc. XIX Colloq. Law Outer Space," California, 1977, pp 47-51.
13. G. Gál, "Space Law," Budapest, 1969, p 215.
14. R. F. von Preuschen, "International Cooperation in the Use of Space Laboratories," "Proc. XVII Colloq. Law Outer Space," pp 233-244.
15. McDougal, Lasswell, Vlasic, "Law and Public Order in Space," New Haven--London, 1964, pp 671-674.
16. Resolution 1721 (XVI) of 20 December 1961.
17. B. G. Mayorskiy, "Registration of Space Objects," "Mezhdunarodnoye Kosmicheskoye Pravo," Edited by A. S. Piradov, Moscow, Mezhdunarodnyye Otnosheniya, 1974, pp 129-131.
18. In international space law there is no concept of the "nationality" of a space object. Different viewpoints on this question have been stated in the doctrine. Although a majority of authors considers this term useless, a number of Western legal experts are in favor of introducing such a concept, for example: R. F. von Preuschen, op. cit., pp 237-239; A. Beuckling, "The Formal Legal Status of Space Stations in Orbit," "Proc. XVI Colloq. Law Outer Space," California, 1974, pp 214-218; C. Q. Christol, op. cit., pp 420-422; J. C. Cooper, "Explorations in Aerospace Law," Montreal, 1968, pp 251-254; R. H. Mankiewicz, "The Legal Status of Space Vehicles," "Rept. 53d Conf. ILA, Buenos Aires, 1968," London, 1969.

19. A. I. Ruden and V. G. Emin, "Near-Earth Manned Space Stations," SOVETSKOYE GOSUDARSTVO I PRAVO, No 4, 1972, p 113.
20. R. F. von Preuschen, op. cit., p 239.
21. For more detail on this see: A. A. Rubanov, "Mezhdunarodnaya Kosmicheskoye-Pravovaya Imushchestvennaya Otevetstvennost'" [International Space Law Property Liability], Moscow, Nauka, 1977.
22. Article II of the Agreement. For the text, see: "Hearings Before the Committee on Aeronautical and Space Sciences. 93d Congress, 30 October, 1973," Washington, 1974, pp 128-134.
23. See: P. G. Dembling, "Commercial Utilization of Space and the Law," "Yearbook of Air and Space Law, 1967," Montreal, 1970, p 288.
24. K. Bushuyev, "Mutual Aid in Space," "Sovremennyye Dostizheniya Kosmonavтики" [Modern Achievements in Aeronautics], Moscow, Znaniye, 1973, p 23.
25. R. F. von Preuschen, op. cit., p 241.
26. Ibid.
27. A. W. Stoenner, "Stations spatiales presentes et futures: techniques et droit," p 329.
28. R. J. Tamm, "Reflections Upon Legal Aspects of Skylab and the Space Shuttle," "Proc. XVI Colloq. Law Outer Space," California, 1974, pp 242-246.
29. E. Fasan, "Comments to the Introductory Report on the Legal Status of Earth-Orbiting Stations," "Proc. XII Colloq. Law Outer Space," California, 1970, p 97.
30. "Europe in Space," p 44.
31. AVIATION WEEK AND SPACE TECHNOLOGY, Vol 91, No 19, 1969, pp 61-64; A. M. Dula, "Legal and Economic Prerequisites to Space Industrialization," "Proc. XIX Colloq. Law Outer Space," pp 257-266.
32. B. N. Petrov, "Space Research and Scientific-Technical Progress," "Lenin i Sovremennaya Nauka" [Lenin and Modern Science], Moscow, Nauka, 1970, pp 150-158.

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